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ABSTRACT

Experiences with a day care center indicating the need for sensitivity to the basic problems facing multi-problem families are reported in a review of an urban day care center for young children. Anecdotal records of the population involved are presented, followed by data from a perinatal home visit program which focused on nutrition. Cognitive data are reported which indicate the developmentally enhancing effect of the perinatal program, and socialization variables which serve as predictors of cognitive achievement scores are also detailed. Developmental data findings further support early intervention as a means of enhancing cognitive development. (LH)

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Development of a Day Care Center for Young Children

SYRACUSE UNIVERSITY CHILDREN'S CENTER

Progress Report, 1970-71

PR-156 (C6)

Office of Child Development

College for Human Development
Syracuse University
Syracuse, New York 13210

J. Ronald Lally, Project Director

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Contributors

The preparation of this report was a cooperative effort by the Research Staff of the Children's Center. All the members were contributors in one way or another. Many staff members wrote large sections that were edited only slightly; others spent hours processing and interpreting the data for the writers; others typed and edited tapes, texts, and tables. Rather than singling out a few members of the staff, I would like to list the names of all the members of the research staff who helped create this document. I would also like to thank the service staff, who by providing a quality service to the children and the families, made our results something I am proud to report.

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Table of Contents

Page

INTRODUCTION

DESCRIPTION OF POPULATION

Anecdotal Records 1

PERINATAL HOME VISIT PROGRAM

a) Prenatal Home Visits - Nutrition Data 8

b) Perinatal Group versus Six-Month Group Nutrition Data . . . 10

c) Summary of Most Frequently Reported Responses on the Nutrition Questionnaire for Age One Week to Eighteen Months .. 21

COGNITIVE DATA

a) Perinatal Group versus Six-Month Group on Six-Month Cattell Infant Intelligence Scale 26

b) Infant Program Curriculum: Center Based 28

INFANT PROGRAM - SOCIALIZATION VARIABLES SERVING AS PREDICTORS OF COGNITIVE ACHIEVEMENT SCORES 30

a) Weekly Home Visit Report (WHVR) 30

b) The Implicit Parental Learning Theory Scale (IPLET) 32

c) The Inventory of Home Stimulation (STIM) 32

d) Bayley Scales of Infant Development: Infant Behavior Record . . 33

DEVELOPMENTAL DATA

a) Infant Program 47

b) Comparison of Group Performance on Individual Items of the Peabody Picture Vocabulary Test (PPVT) 50

1) Ages 2-3 to 2-11 51
2) Ages 3-0 to 3-8 54

c) Family Style Education

Cognitive Data/Social Emotional Interpretation 58

Page

d) Children's Center Graduates Still in Day Care

1) Cognitive Data 61

a) Results of ITPA Administration 62

b) Results of Stanford Binet Administration . . . 70

SUMMARY OF PROGRESS REPORT 82

REFERENCES 83

LIST OF TABLES

LIST OF TABLES

Table		Page
1	Comparison of Prenatal Dietary Intake for First Two Visits and Remaining Visits	9
2	Percentages of Most Frequent Responses Given to Nutrition Questionnaire at Eight Points in Time: One Week to Eighteen Months	24
3	Six Month Mean Cattell IQ Scores by Sex and Program Group for Black Infants	27
4	Product-Moment Intercorrelation Matrix for Weekly Home Visit Report Variables with Two Criterion Variables for 29 Center Infants	34
5	Summary Table of Stepwise Regression Analysis for Weekly Home Visit Report Variables with Piaget Total Score as Criterion	35
6	Summary Table of Stepwise Regression Analysis for Weekly Home Visit Report Variables with Cattell IQ Score as Criterion	35
7	Product-Moment Intercorrelation Matrix for IPLET Variables with Two Criterion Variables for 29 Center Infants	37
8	Summary Table of Stepwise Regression Analysis for IPLET Variables with Piaget Total Score as Criterion	38
9	Summary Table of Stepwise Regression Analysis for IPLET Variables with Cattell IQ Score as a Criterion	38
10	Product-Moment Intercorrelation Matrix for STIM Variables with Two Criterion Variables for 29 Center Infants	39
11	Summary Table of Stepwise Regression Analysis for STIM Report Variables with Piaget Total Scores as Criterion	40
12	Summary Table of Stepwise Regression Analysis for STIM Report Variables with Cattell IQ Scores as Criterion	40
13	Product-Moment Intercorrelation Matrix for BAYLEY Variables with Two Criterion Variables for 29 Center Infants	42
14	Summary Table of Stepwise Regression Analysis for BAYLEY Variables with Piaget Total Score as Criterion	43
15	Summary Table of Stepwise Regression Analysis for BAYLEY Variables with Cattell IQ Scores as a Criterion	43

Table		Page
16	Product-Moment Intercorrelation Matrix for ADDITIONAL Variables with Two Criterion Variables for 29 Center Infants . . .	44
17	Summary Table of Stepwise Regression Analysis for STEPWISE Variables with Piaget Total Score as Criterion	45
18	Summary Table of Stepwise Regression Analysis for STEPWISE Variables with Cattell IQ Score as Criterion	45
19	Mean Cattell IQ Scores by Age, Sex, Ethnicity	48
20	*t* Tests of Cattell IQ Scores by Age, Sex, and Ethnicity . . .	48
21	Mean Cattell IQ Scores, *t* Tests, and Correlations at Three Ages for Center Children	49
22	Mean Scores and Time in Program for Family Style Children . .	60
23	ITPA - Eight Selected Sub-tests Means, Standard Deviations, *t* Values	65
24	Distribution of ITPA Sub-test Scores Relative to Chronological Age in Children's Center Sample	66
25	Distribution of ITPA Sub-test Scores Relative to Chronological Age in Syracuse University Early Childhood Education Center Sample	67
26	Comparisons of Percentages of First Response Given to ITPA Verbal Expression Sub-test	69
27	Comparison of Percentage of Categories Used of ITPA Verbal Expression Sub-test Between CC and SUECEC Groups	69
28	Means, Standard Deviations and *t* Values for Stanford-Binet Administration	71
29	Distribution of Stanford-Binet IQ's	72
30	Percent Passing Items in Years III-6 through VI on Stanford-Binet	74
31	Binet IQ by Sex for Two Groups	76
32	Ages and Scores for Children's Center Sample Obtained from Two Prior Binet Administration	76

Table		Page
33	Results of Four Stanford-Binet Administrations for Two Groups of Children's Center Graduates	78
34	Percent Passing Items in Years III-6 through VI on Stanford-Binet: Fall of Last Year in Center	80
34 (cont)	Percent Passing Items in Years IV through VII on Stanford-Binet: Spring of Last Year in Center	80
34 (cont.)	Percent Passing Items in Years V through IX on Stanford-Binet: Spring of Kindergarten	81
34 (cont.)	Percent Passing Items in Years VI through X on Stanford-Binet: Spring of First Grade	81

Introduction:

Our experiences in the past year have made it evident that any program that presumes to care for the needs of multi-problem families must be extremely sensitive to the basic problems facing these families, and not just to surface problems. It is a credit to the strength and resiliency of many of the families that they function as well as they do considering the economic exploitation, the legitimate fears of daily harm, and the constant affronts to their dignity. The witnessing of brothers and sisters, and sons and daughters, moving to drug addiction and lives of crime is common, but still most of the families struggle to make life better for their infants.

We have learned that problems change daily, and that those that are seemingly solved for a while can return with even greater intensity. It would be presumptuous to claim that our program is an unqualified success. We do feel, however, that it is a positive approach to helping people begin to solve some of their daily problems, and the Home Visitors find that they are increasingly relied on by the mothers. We also feel that the Home Visitors and the teachers have provided assistance in a way which does not destroy parental pride, but actually increases it.

Before this progress report can be understood, the reader needs to learn again how complex and discouraging the lives of poor people can be. Every one of our families in the "disadvantaged" group is faced with devastating problems. The next section includes information reported by the paraprofessional Child Development Trainers in their own words, and a more traditional description of the sample which comprises our major target group, i.e., the families of children under three years of age.

Sample:

A) Anecdotal Records

1) Alpha and Beta One: I have been working with Alpha One and his mother Beta, who is seventeen, since she was pregnant and was living with her mother on A Street. She moved out from her mother's because she wanted to make it on her own, and to take care of her baby herself, and take more responsibility. She moved with her father, and her father wasn't doing too much for her so she stayed there for a little while until she found a better place for her and her baby. Now she is living with her grandmother. She is doing very good. She is still going to school. She got a job where she can go to work in the morning, and to school in the afternoon. Her and her baby have a very close relationship. She is very good to the baby. She cooperates with me. I have helped her put in an application to the Welfare. She was having very much trouble with the natural father. He has done nothing for the baby. He was very mean to the baby and mean to the mother. He would jump on her. This is one reason that she has had to move from place to place because he would find out where she was living, and then he would come over and jump on her if she had someone else there, or just for no reason at all. One particular week when I went to visit her he drew a gun on her and made her scared to death, and she had to sleep with this gun up to her head. She was very frightened about this. One week he had her mouth all out where he had beaten her very badly, and he also

had trained his dog to be very vicious and he would jump on people, and have people scared to death of this dog. She had a boy friend there one time at the home, and he had the dog attack her boyfriend. The dog bit the boyfriend on the leg. Now she is not having too much trouble from him. She doesn't talk about him too much. I don't think he has jumped on her in a long time now, and I think eventually he is going to be gone because he has a new girl friend, and she is very happy about this. I don't know if she is going with anybody else right now because she is so concerned about her baby and her relationship with her baby. Pretty soon she said she is going to be finding her a place to move into because she has this job where she is going to be taking care of the baby and working. I don't think she has had any problems with the law, but I think some of her family have. She has some teenage brothers and they have had problems with the law, but I don't know their reason. Her relationship with her mother is very good. Her mother talks to me all the time about her. She is very proud of what Beta is doing for the baby, but she doesn't want me to repeat this to Beta because she don't want her to know about it.

2) Kappa and Lambda Two: I started working with Kappa and her mother Lambda when she was prenatal. Lambda was living with her mother on South Place. South Place is a little alley where they only have about three houses there. Many houses have been torn down. They had a dog back there with a disease. This is the main reason I was very scared to go in the house--I was afraid of the dog. He was frothing from the mouth, and very dangerous looking. When I went into the household it was very bad. There was no place to sit down. You would prefer to stand up because they never cleaned up. She even cooked in a nasty kitchen which was too filthy for anyone to cook in. One day I went there and she was cooking a pot of spagetti. The older children were splattering spagetti all over my clothes and everything, and they were eating in front of this mess. Kappa's mother was very hard to get along with because she doesn't know too much. When she was in labor she got the time confused--she put the minutes into seconds--so she didn't even know how to tell the time. On two of my visits I also talked with Lambda's mother. She said Lambda had problems from the very beginning. The father was living with the family. He was making $600 a month, and he wouldn't support the family, but he was living there, so she went to Welfare for help. Welfare found out that the father was making $600 a month for the family, and they wouldn't give her any money. She took it to court. The court said the Welfare had to support her, because the father was not giving any support to the mother for the kids or for herself, so Welfare started supporting her. The Welfare Director took it back to court and said that the Welfare did not have to support the family because that was too much money--the father was making $600 and he could support his family off of that. The court agreed, so Welfare stopped paying her, but what happened next I'm not sure, because she does not discuss it with me any more, but I do know that she is getting about three hundred a month.

Since the baby's birth the baby has not been well. She has been very sick. One week the baby fainted. Her mother didn't know what happened, and the grandmother didn't either. They called the doctor. He told them to spank the baby on her bottom, and this would bring the baby back. They did this, and the baby

still didn't come back. They said the baby fainted for five minutes, but I don't know this because I wasn't there. I recommended the Health Center to them so they took the baby there, and the doctor recommended General Hospital. They took the baby there, and one of the doctors there found out the baby had epilepsy. Now the baby is having convulsions. They say she has two or three every day. They are taking tests on the baby to find out what is wrong. They are taking brain tests on the baby. When they find out, she is supposed to let me know.

The baby's father is a very nice guy. I talked to him. He has sat in on some of our training sessions. He seems to be very interested in our program. He feels that it is a very good program for the baby. The mother also feels this way, and the grandmother now feels this way because she says all of her kids are ignorant and stupid, and that she is very glad that this program is helping the baby. The baby and her father are very close, and he is there almost every day. Lambda takes the baby over to his family home. The grandmother likes the baby too, so there is a very close relationship between the baby and her father. Recently Lambda has been sleeping a lot, and when I go there I talk with the grandmother most of the time. She doesn't want to be awakened. I haven't seen her in three weeks because she has been asleep every time I have gone there. I talked to her over the phone, and she said that if tomorrow she is asleep when I come, that her grandmother should wake her up, so maybe now she is changing a little. I don't understand what is going on. I don't know if she is neglecting me, or just what she is doing. Maybe she is worried about the baby. I think her problem is that she stays up half the night with the baby, and then she sleeps in the daytime when the baby is asleep because the baby keeps her up at night.

3) Sigma and Zeta Three: I started working with Sigma when he was six months old. His mother, Zeta, is a young lady with two children under three. When I first started working with her she wasn't married, but then she had another baby and she married the father of both babies. They all live together with her mother, but since the second baby was born, the mother and father have separated and she is talking about divorce. They only lived together three or four months, and since then they have separated and she planned to get a divorce. She has decided to get a divorce because he has started running with other women, and she felt she just couldn't bring any more children into the world with a father like that. She didn't know how she would take care of them. She is young, but she does a good job taking care of her children, and all the other members of the family seem to be real close and have a close relationship. She has gone back to school and taken the high school equivalency course, and she is planning to go to Community College to continue her education.

When Sigma started in at the Center he wasn't used to being around other children, but only with members of his family. It was hard for him to get used to being around other children. He didn't know how to play with them. He is a rough little boy. Now he seems to be changing a lot, and is getting a lot out of the program. When I do the exercises he can start right out doing them without too

much explaining. A week and a half ago Zeta was in a store , and she and another girl were picked up for shoplifting. The guard said that the two ladies had two sweaters that they hadn't paid for. They went to jail, and the grandmother couldn't get bail for them, so they had to spend one night in jail, but I went to visit her yesterday and the grandmother stated they plan to sue the guard and store for false arrest because the girl says she didn't take anything. It seems that the guard was trying to date the other girl, and he had let her go into the store taking things and leaving the store, and when she didn't want to talk to him any more, he decided to have her picked up.

4) Delta and Epsilon Four: Epsilon is a girl that is strictly from the deep South, considered to be from the back woods. Epsilon came to Syracuse with her mother to visit her sister. Her mother left her in Syracuse, where she became involved with a married man that is a father of about ten children. Epsilon became pregnant. He moved Epsilon into an apartment. Later he moved in five of the children, which are all as large as Epsilon, and almost as old. When I first visited the home and did a record on her, she said she was 19. Later on I found that she was 22 or 23. After Delta was born, I continued my weekly visit with the baby. The baby was not coming along as well as I though she should, so by taking his regular diet I could tell how the baby was eating. I found the baby wasn't eating the proper food. I asked Epsilon about this, and she said she couldn't afford to buy the food that the child needed. She continued to feed this child milk, but no cereal--just milk, milk, milk. One afternoon I asked her whose children were living in the home, and she said they were her husband's children, so I wanted to know why they weren't in school. She said they were so bad that they kicked them out of school, so I think this made this mother very unhappy, because so many children were in this house, and she was young and had never experienced this before--being on her own in a big city, and being home with five or six children. As I continued to do my weekly visits with Epsilon,I would stay around and talk about her personal problems. When the baby was born she had her six-week's appointment to take the baby back to the clinic, but she didn't do this, and I had to make this appointment for her. The father wouldn't take her to the clinic, so in the meantime I made another appointment and this was not kept, so the father came in when I was there and I wanted to know why they didn't keep the appointment. He said he had been away and hadn't made it back in time, but said he would try to do better the next time. Another appointment was made, and they did not keep this one either.

So later on I went to visit Epsilon,and the father of this child said she wasn't living there any more--that she was over to her sister's. So I went over to the sister's, and found that he had put Epsilon and the child out, and the sister had to take her in. He had moved another lady into the home. Epsilon was very unhappy about this, because she was there waiting for him to come over and bring money so she could get milk for the baby, and food, and he never did show, so I came back to our Center and got milk and

food and took it to the home, for this child. She continued to live with her sister until she found an apartment of her own. After she found an apartment, she didn't go directly into it because she didn't have any furniture or anything. Epsilon is on Welfare, but the Welfare would not give her money to buy furniture for the apartment, so she moved about three blocks from her sister's, then later on she moved into an apartment next door to her sister's which was partly furnished, but after that she continued to live in the house with her sister, because she was afraid to live in an apartment alone. I could never get Epsilon to cooperate with me too much. She would never come in to see the Center. She would never come to the workshop. She would promise me that she could come, but when I would go to the home to pick her up, she would always be gone. Even when I went at 8:00 o'clock in the morning, she was never there. So then I decided that I would just stop pressing her about coming into the Center, and just go into the home and continue to visit the baby and sit down and talk to her. She told me later she would not come into the Center because everybody there was a stranger, and she was just afraid of people that she didn't know. Later on I found that this mother is pregnant again by the same man, who is still living with the other lady. She is very much in love with this man. He still is not doing anything for the baby. This baby is due in March, 1971.

5) Chi and Rho Five: Chi's mother, Rho, has three children, and the father is the same for all of them. They lived together for a long time. When she got pregnant with the third baby they had a fight and he moved out. He started going with another woman, and they became engaged. The day this last baby was born he got married to the other woman. He invited this girl to his wedding, and she was going, but she had the baby before she could get there, and this really shook her up a lot. When she was living with the father she used to keep her place so clean, but since this happened and he has left her and married somebody else, and invited her to the wedding, she keeps the place a mess. It's just like a pig-pen there. She started working at a bar after this baby was born. This is a rough bar. She worked until 1:00 a.m. She worked there for awhile, but I don't know if she was fired or quit, but she is not working there any more. Her place is a mess. I went there on Monday morning and there were beer cans, and papers were all over the floor. Chi was soaking wet and yelling; Rho was in bed, and she said she was sick. I told her if she would get up and clean up a little bit and give the baby her food, she might feel a little better. This mother is on Welfare. When we first started working with her, she was having problems with Welfare because they cut off her money because she was living with the children's father, and he was supposed to leave money downtown for the children, and they cut her check. After he left, they reinstated her money, and she is getting more money now.

It is easy to dismiss anecdotal records used as illustrations as atypical and not representing the behavior of most of a sample. These illustrations do represent the norm, and I fear represent the lives of many young low-income families in our country today.

B) Community

"Of Syracuse's 200,000 population, 92% are White, 5% are Black, and the remaining 3% are Puerto Rican and Indian. More than 50% of the city's residents have an income of less than $6,000 a year, and there has been an 8% decline in population over the last ten years. Unemployment fluctuates due to seasonal hiring and layoffs, but usually maintains itself between 5 and 10%. Major employers in the area are General Electric, Crucible Steel, other factories, and the universities.

The people served by the center live in the inner city and are products of urban unrest, unemployment, and racism. Children are fed on welfare. Housing and education are poor, and there is widespread poverty and discrimination. There are a few other centers nearby, but they do not meet the demand for day care, especially for infants" (ABT, 1970).

C) Various Distributions

Sex - 51% of the children served by the center are girls, and 49% are boys.

Ethnicity - 65% of the children are Black, and 35% are Anglo.

Family Status - 23% of the families are complete, 77% have a mother only. 9% married since the program started, 5% separated, 3% married and then separated, 68% remained single, 11% were married at the beginning of the program, and 4% had a vaguely defined union, with periodic separation. The natural father was viewed as the child's father figure 45% of the time, a male other than the natural father, 17% of the time; multiple figures 14% of the time, and no father figure 24% of the time.

Education - None of the mothers had a high school diploma at enrollment, but all had completed between seven and eleven grades of school. Seven mothers have completed high school or its equivalent since the program started. Some of the mothers, 6%, have gone back to school, 21% of the mothers were in school when the program started and remained there. Some dropped out of school, 13%; and 51% were out of school when they entered the program and did not return. Most of the fathers, 75%, have completed between grades seven and eleven, 19% of the fathers are high school graduates, and 6% have had some college education.

Employment - Most of the 18 fathers, 88%, are employed, while the other 12% are looking for work. Of the mothers, 28% are employed full-time, 6% part-time, 24% are in training or school, 4% are unemployed but seeking work, and 38% are housewives who are not seeking work.

Income - These figures are based on actual salary, excluding welfare and income of extended families with whom the mothers live. Fifty-six percent of the families earn less than $1,000 per year. Most of the people in this group, however, are girls under twenty living with their parents, with more money available to them. Fourteen percent earn from $1,000 to $2,000; 17% from $2,000 to $3,000; 4% from $3,000 to $4,000, 4% from $4,000 to $5,000, and 4% from $5,000 to $7,000 per year.

Movement - Our families have been fairly mobile. Twenty-three percent of our families have moved two or more times in the past year. Twenty-nine percent moved once, and 48 percent did not move. A great deal of the movement was done by the mothers with their new babies. Eleven mothers moved out of their family homes and lived alone with their babies. Four mothers left their husbands to live alone. Six mothers, who were living alone, moved back in with their families. Three mothers left their families to live with their husbands. Sixteen mothers moved many times, and lived with various people. Three mothers left their families, lived alone for a while, and then returned home.

Criminal Involvement - Ten of our mothers have been arrested on various charges, theft and assault being the most common charges. Twenty-one of the men who serve the role of father figure appeared in criminal court, 14 appeared in family court, and eight are now in prison, or just recently released. Eighteen other people, (sisters, brothers, mothers, etc.), living with the mothers and babies, have been arrested.

Perinatal Home Visit Program:

This section deals with the development of a program which uses paraprofessional home visitors designated as Child Development Trainers (CDT's), who act as disseminators of information necessary for the growth and development of the fetus and young infant. Weekly home visits were designed to aid the expectant mother to understand her own nutritional needs and to prepare her for the arrival of her new infant. A detailed description of the cognitive, nutritional, and health programs can be found in other center reports (Lally, 1970; Wright, Lally, and Dibble, 1970). Data presented will include dietary records of both mothers and children before and after the birth of the child. Such records document specifically the need for more systematic attention to the nutritional needs of the low-income mother and child on the part of the community agencies providing services for families. Scores on developmental tests will be presented which show the different developmental levels of children from this program compared with those who have not received program intervention.

The Children's Center home intervention program is composed of two groups of mothers, those who entered the program during pregnancy, and those who entered when their infants were approximately six months old. A CDT was assigned to each pregnant woman when she entered the program. In general, the trainer visited weekly with the mother through later pregnancy, and continued after the infant was born. Nutritional needs during pregnancy and lactation, if the mother planned to breast-feed, were emphasized during the prenatal visits. After the infant was born, the CDT continued to help the mother in the area of infant feeding, and began introducing the cognitive stimulation exercises to the mother, which she would later practice with her child. Each week the CDT's recorded food intake of the mother and infant for a 24-hour period; this record was evaluated by the CDT with the Nutritionist. Suggestions for improving the infants' diets were made when appropriate. In addition, each month the CDT completed the nutrition questionnaire "Baby Diet Form" with the mothers.

The second group of mothers, those who entered the program when their infants were six months old, were also assigned a CDT, who, as part of the home visit program, began to give the same instruction in infant feeding to these mothers. The nutrition questionnaire was also completed for these mothers and infants, and instruction in the cognitive stimulation exercises was given to the mothers.

A) Prenatal Home Visit-Nutrition Data:

During the first five home visits to the prenatal subject, much emphasis is placed on the nutritional needs of the mother during pregnancy and lactation. In addition to obtaining dietary information, the CDT teaches the pregnant woman how to select an adequate diet from the Four Food Groups, how to plan her money so that she can afford to buy food for an adequate diet, and if necessary, how to prepare the food. The CDT discusses with the mother whether or not she will nurse her baby, and with appropriate help plans an adequate diet for her during lactation. When necessary, emphasis on diet may continue throughout the prenatal visits.

A total of 312 dietary record forms have been completed for 36 prenatal and lactating mothers. Many of these mothers have been visited by the CDT for three months with weekly food intake records taken and evaluated each week in terms of food groups. These cumulative records afford dietary profiles for the last three months of pregnancy, which the CDT uses for teaching the woman how to improve her diet. The intakes will later be analyzed for specific nutrient content--particularly protein. This in turn will be compared with other parameters, such as birthweight, length, IQ, etc.

We find that special diets, especially weight control and sodium restriction, are frequently recommended by the local clinics to our prenatal subjects. Half of the prenatal subjects were placed on special diets at some time during their pregnancy and/or lactation: 42% were placed on sodium-restricted diets, 44% on weight-control diets, and 11% on various other diets. A number of these women's diets are subject to multiple restrictions, with low-sodium-weight control the most common. The physician is the most commonly named source of these special diets, although a few name a dietitian; several decided to go on a diet themselves, or followed the advice of a relative. We find that these diets are poorly understood and rarely followed. When necessary, our nutritionist consults with the prenatal clinic about the dietary prescription and carefully instructs the CDT to help the mother make the necessary diet modifications. If requested by the CDT, the nutritionist visits the mother with the CDT to reinforce the CDT's teaching.

During pregnancy, several mothers reported unusual dietary practices. Seventeen of the prenatal mothers reported eating laundry starch, clay, seeds, unusually large amounts of ice (at least one tray a day), or other nonfood items:

ice eating was reported	22 times	by 11 mothers
seeds	11	5
laundry starch	9	5
clay	4	1
baby powder	1	1

It was further reported that over 94% of these women report taking some form of dietary supplement, but considerable confusion exists about whether the vitamin preparations contain iron or calcium supplementation. Breast-feeding was planned by 17% of the mothers.

Half of the prenatal mothers reported that they received donated foods and/or food stamps from official sources, and another 17% received donated foods from friends. Almost 17% began receiving the food or stamps while in this program. At the program's inception, only donated food was available from community sources to low income families. The CDT's recorded the frequency of usage of the donated foods, and helped the women to utilize infrequently used foods. When the program had been in operation for about nine months (July 1) food stamps were made available to these families, and because the CDT's are kept aware of such changes in welfare provisions, this information was disseminated to the families. It is felt that this information helped the mothers move quickly to the food stamp program, for almost all of the women who had been receiving donated foods bought food stamps when that program came into effect.

Because the population included so many young mothers who lived with their parents (45% of those reported), meals were usually prepared by their mothers or other relatives. It was necessary, therefore, that the CDT's frequently advise the family members who prepared the meals on how to make the best use of the donated foods or stamps, and how to prepare special diets. Many meals were eaten outside the home: approximately 28% of the forms indicate that at least one meal was eaten out on the day on which the dietary information was collected. This may be due, in part, to the YMED program where the expectant mothers are given meals.

Sixty-nine percent of the women usually used iodized salt, while about 19% used uniodized salt. After being advised about the benefits of iodized salt by the CDT's, nine women who had previously used uniodized salt reported using iodized salt.

Five or more prenatal dietary forms were available for 26 women. These dietary intakes were compared with estimated dietary needs, using a point system for recommended servings from the Basic Four food groups. One point was given for each recommended serving from the milk, fruit, vegetable, and bread groups, and one point per ounce of meat or its equivalent. No points were given for extra servings beyond the recommended amounts. It was thus determined that pregnant women over 18 years of age would need a minimum of 19 points; those under 18 would need 21 points; lactating women over 18 would need 21 points; and those under 18 would need 22 points. The average intake for the first two visits was compared with the average intake for the rest of the prenatal visits. Table 1 contains the scores.

Table 1

Comparison of Prenatal Dietary Intake for First Two Visits and Remaining Visits

	First visits	Remaining visits	Average visit
15-16 points	8	2	2
13-14	5	8	8
11-12	4	10	12
9-10	6	5	4
8	3	1	-

In comparing the average diet of the first two home visits with the average of the remaining visits during pregnancy, 9 showed an improvement of 1 or more points, 11 showed a decline, and 6 stayed the same. These changes are shown in Table 1. The following trends appeared: women showing improvement tended to have lower initial scores (9.7 pt. vs. 14.5) and lower average scores (11.6 vs. 12.3). Thus the women with the poorest diets were being helped. Those showing improvement also had more home visits by the CDT's (9.1 visits vs. 7.5).

Most of the mothers were on special diets (62%), especially low calorie low sodium diets. This is in contrast with the latest recommendations of the National Research Council (1970) which advocates more liberal intakes during pregnancy, particularly for the adolescent girl. The women on special diets showed lower scores than those on regular diets (11.7 vs. 13.4). In a number of cases, marked declines in scores could be seen when the woman was put on a diet restriction. This was particularly true for those on liquid low-sodium diets consisting of one quart each of orange juice, skimmed milk, and water. These drastic caloric restrictions are not appropriate for the special nutritional needs of the young adolescent who may enter pregnancy in a poor nutritional state. Since there is also doubt as to the effectiveness of routinely restricting salt intake to prevent pre-eclampsia, we would urge much more emphasis be placed on teaching the mother the importance of an adequate diet and how to select it, and less frequent use of modified diets.

B) Perinatal Group vs. Six Month Group - Nutrition Data

To determine what effect nutrition instruction during the first six months of infancy had on mothers' infant feeding practices, a comparison of responses to items on the nutrition questionnaire was made between the perinatal and six month entry groups. Because it was recognized that other factors could exert an equal or greater effect on the mothers' responses to these items, two other relationships were examined. Many of the mothers had participated in an educational and health program for unwed mothers, YMED (Osofsky & Osofsky, 1970), where nutrition is a major component. Thus, responses of mothers in the YMED program were compared with those not in that program. Since there is also the possibility that culture has an effect on infant feeding practices, responses of Black and White mothers were also compared.

The following data, therefore, represents the responses of 63 mothers to 13 items from the nutrition questionnaire. This information was collected when the infants were approximately six months old (five to seven months). The data presented represent percentages of response to the various items. Comparisons are presented between three main variables: Entry into the program (prenatal or six month entry); non-YMED or those in the YMED program; and race of mother. These dichotomies are defined as follows:

1) Prenatal--consists of 21 mothers who have been in the program since their pregnancy, and have had six months of nutrition instruction by the CDT's.

2) Six month entry--consists of 42 mothers who have just entered the program and have had little or no nutrition instruction from the CDT's.

3) YMED--consists of 24 mothers from Groups 1 and 2 who have participated in the YMED program.

4) Non-YMED--consists of 39 mothers from groups 1 and 2 who have not participated in the YMED program.

5) Black Group--consists of the 47 Black mothers from Groups 1 and 2.

6) White Group--consists of the 16 White mothers from Groups 1 and 2.

A presentation and discussion of the responses of the various groups to the thirteen items follows.

Item 1. Who supervises the baby's health?

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Well-baby clinic	48	17	12	37	21	47
Combined Well and Sick-baby clinic	48	68	87	45	68	40
Private Doctor		12		13	6	13
No responsible agency for supervision	4			3	2	
Unknown		2		1	2	

The larger percentage of infants in the Prenatal group who are under health supervision from a Well-baby clinic reflects the urging of the CDT's to the mothers to make Well-baby clinic appointments before the infants are six months old, and to continue taking them for regular visits.

The combined Well- and Sick-baby clinics represent primarily two agencies--the YMED program which continues the health supervision of the infants through 6 months of age, and the Neighborhood Health Association which is a comprehensive family health program available to low-income clients. Both were used extensively by the mothers in the Children's Center program. As was expected, most of the mothers in the YMED program indicated this agency for the health supervision of their infants.

Item 2. Was the baby ever breast-fed?

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Yes	24	12	17	15	13	25
No	57	86	75	77	79	69
Unknown	19	2	8	8	8	6

Although the total number of mothers who breast-fed their babies was small (10 mothers--16%), the percentage was greater for the prenatal group than for the six-month entry group. The CDT's encouraged the mothers to breast-feed, and during pregnancy helped prepare them for lactation by offering support and other information. This appears to have had some effect on a small number of mothers (24% prenatal vs. 12% of the six-month entry group).

There appear to be no differences between the YMED and non-YMED mothers in their response to this question.

Although the percentage of White mothers breast-feeding their infants was greater than the Black mothers, this sample does not seem to indicate a cultural difference in this pattern.

Item 3. What kind of milk is the baby now being fed?

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Commercial formula	14	9	12	10	11	12
Homemade formula	14	5	4	10	11	
Plain milk	71	83	83	77	77	87
Special preparation		2		3	2	

Since the six month data reflects a transition period from formula to plain milk, it is difficult to interpret these responses. However, it appears that the role of the CDT was successful in helping the mother make "homemade" formula, if prescribed, rather than have her dependent on the more expensive commercial formulas.

The responses indicate that more of the non-YMED mothers were preparing homemade formula than were YMED mothers, and that none of the white mothers were using homemade formula. Since this is a transition period, these results are at best slight indicators of kinds of formula and milk used.

Item 4. If the baby is fed plain milk or homemade formula, what kind of milk is used?

Percentage of Various Responses by the Different Groups

	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Response						
Whole cow's milk	52	73	62	68	65	69
Evaporated whole milk	33	7	21	13	17	12
More than one kind		2		3		6
Not applicable	14	17	17	16	17	12

The CDT's suggestions regarding choice of milk appears to have influenced mothers in the prenatal group to use evaporated milk as infant food. The YMED program appears also to have had a similar effect in encouraging use of evaporated milk. Ethnicity did not appear to influence these responses.

Item 5. How much milk or formula was on hand for the baby?

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Enough for one feeding	19	9	17	10	8	25
Enough for two to three feedings	5	2		5	4	
Enough for one day's feeding	24	26	17	31	25	25
Enough for more than one day's feeding.	48	45	54	31	47	44
None available		2	4		2	
Not applicable (breast-fed)	5	2	4	3	2	6
Unknown		12	4	10	11	

With the possible exception of the one response "none available" in the six-month entry group, the home visit program did not appear to influence the response to this question. Seventy-two per cent of the responses in the prenatal group, and seventy-one per cent in the six-month entry program indicate one or more day's supply of milk on hand for the infants. Only one mother in the YMED group had no food available; otherwise the groups appear similar on this variable as well as on the ethnic variable. It appears, then, that most of the mothers were conscientious in having food available for the infant.

Item 6. Are the utensils available for sterilizing the baby's formula available in the home? Pot, tongs, can opener.

Percentage of Various Responses by the Different Groups

	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Response						
All available	52	24	42	29	37	25
Not all available	5	5		8	4	6
Not applicable, formula not sterilized	43	68	68	60	56	69
Unknown		2		3	2	

By six months of age, most mothers have stopped sterilizing formulas, as indicated in the six month entry group. It is possible that the early emphasis on sterilizing infant's formula by the CDT's have resulted in more than half of the mothers in the prenatal group continuing to do so up to six months. But, the availability of the sterilizing utensils does not necessarily reflect their usage at six months. This data may be more reflective of early sterilization, rather than sterilization of formula at six months. Instruction in the YMED program seems to have had a lesser, but somewhat the same effect on the mothers' responses to this question as the CDT's teaching. No difference between the two ethnic groups is evident in the mothers' responses to this question.

Item 7. How often does the baby eat each of the following foods? (Percentages refer to answers in the "frequent" category).

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Fruit juice	67	43	46	54	47	62
Fruit	86	76	67	87	72	100
Vegetables	90	88	79	95	85	100
Cereal	95	67	58	90	79	75
Meat	71	67	79	61	72	56
Bread, crackers and cookies	24	52	46	41	44	42
Eggs	5	19	25	8	17	6
Combination dishes	71	55	50	67	62	56
Ice Cream	5	21	5	5	21	
Puddings and custards	5	29	21	20	23	12
Other desserts- cakes, pies, etc.	14	14	25	8	15	12
Candy	9	9	12	8	13	
Soft drinks, sugar water, Kool Aid	24	33	50	18	34	19

The first five foods listed above (fruit juice - meat) were the foods most emphasized by the CDT's as being the chief sources of essential nutrients for the infant. For each of these foods, the percentage of mothers in the prenatal group responding "frequently" was greater than for the six-month entry group. There is no similar effect seen in the responses by mothers in the YMED program. In fact, for four of the five foods there is a negative influence. White mothers reported more frequent consumption of fruits, fruit juices, and vegetables, while the Black mothers indicated more frequent use of meat.

The next five food groups (bread - puddings and custards) were neither encouraged nor discouraged by the CDT's during the first six months. The mothers in the six-month entry group responded "frequently" more often to four of these groups than the mothers in the prenatal group.

The last three foods listed were discouraged by the CDT's. No evidence, however, of any influence on the prenatal group is seen, by the mothers' responses. By the same token, a negative relationship is found when the mothers in the YMED program are compared with those not in this program. Black mothers tended to respond "frequently" more often.

Item 8. What form is the food (other than milk) in which the child is usually fed?

Percentage of Various Responses by the Different Groups

	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Response						
Regular or mashed family food	9	20	18	16	22	
Combination of commercial baby food & family food	24	33	35	27	33	21
Commercial baby food	52	42	35	50	35	78
Unknown	14	5	13	5		

The CDT's instructed the mothers to pay particular attention to the consistency of the infant's food. Family foods which could be easily mashed were encouraged, whereas chunks of meat, whole kernel corn, etc., were not. The smaller percentage of prenatal mothers feeding only regular or mashed table food seems to indicate the influence of the CDT's instructions. In comparing the YMED and non-YMED groups, the YMED program did not appear to have had an influence on the mothers' responses to this question. When the White and Black mothers' responses are compared, it appears that ethnicity was a primary factor in determining the responses to this question. The Black mothers were using more family food and less commercial baby food.

Item 9. Does the mother add any salt to the baby's food?

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Frequently		7	8	3	6	
Occasionally		5	4	3	4	
Almost never	95	86	83	92	87	94
Unknown	5	2	4	3	2	6

The CDT's instructions to the mothers not to salt the infants' food seems to affect the responses to this question. Although few mothers salt the infants' food, they were all in the six-month entry group. Ethnicity seemed to influence the mothers' responses to this question more than other factors. All the mothers indicating the frequent or occasional use of salt on the infants' foods were Black.

Item 10. How is the baby fed?

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Bottle and spoon	57	31	33	44	38	44
Bottle, spoon, and cup	33	38	29	41	40	25
Spoon, fork, and cup	5		4			6
Unknown	5	31	33	15	21	25

The number of mothers for whom the data is lacking for this item makes the responses to this question difficult to interpret. It is interesting to note that approximately one-third of both groups have introduced cup-feeding by the age of six months.

Item 11. How many times a day does the baby usually eat?

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Every two or three hours	10	7	9	8	4	18
Three to six times a day	67	76	69	74	76	62
Nibbles all day	9	10	4	8	9	12
Two or less times a day	5	7	13	8	9	
Unknown	9		4	3	2	6

The responses to this item did not appear to be influenced by the nutrition instruction in the home visit program. Since CDT's discouraged extremes in feeding frequencies, the prenatal and six-month entry groups responded similarly. Participation in the YMED program did not appear to influence responses to this question. White mothers indicated that they fed their babies more frequently than the Black mothers fed their infants.

Item 12. Who usually feeds the baby?

Percentage of Various Responses by the Different Groups

Response	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Mother	76	74	62	82	70	87
Father		2	4		2	
Relative		14	17	5	13	
Friend	5			3	2	
More than one person	14	9	17	8	11	12
Unknown	5			3	2	

The responses of the mothers to this question do not indicate any influence by the CDT's in the home visit program. Some of the YMED mothers were still in school, and it was expected that more of their babies would be fed by another person. More of the White mothers responded that they usually fed their infants. It is interesting to note that two per cent of the six-month entry group listed the father as feeding the infant; although this is a very small percentage, it does suggest that infant care is shared by some parents in this group, and that at least some paternal input is recorded.

Item 13. Does the baby take a vitamin and/or mineral supplement?

Percentage of Various Responses by the Different Groups

	Prenatal	Six Month Entry	YMED	non-YMED	Black	White
Response						
Yes	38	67	54	59	60	50
No	52	29	33	38	32	50
Unknown	9	5	12	3	8	

The responses to this question indicate that the CDT's have been most unsuccessful in encouraging mothers to give supplements after the commercial formulas have been stopped. Neither the YMED program nor the ethnic backgrounds of the mothers appear to have very much influence on these responses.

Summary of Nutrition Questionnaire Responses at Six Months

When mothers' responses to thirteen questions on the nutrition questionnaire were compared at six months, it appeared that the nutrition instruction of the CDT's did influence the mothers' feeding practices when their infants were six months old. Responses to eight of the thirteen items examined indicate varying degrees of success of the prenatal program. On only one of the thirteen items examined (item 13) did the prenatal group give clear-cut evidence of doing less well in terms of the teaching goals of the CDT's than the group which entered the program at six months. Item 13 is concerned with vitamin and/or mineral supplements being given to the child, and it is hoped that in the future, the CDT's will become more effective in their teaching of the importance of such supplements being added to the infants' diets.

There are instances in the data where both the YMED program and the ethnicity of the mother had an effect on mothers' responses; however, these effects are less consistent than those of the prenatal program compared with the six-month entry group. This inconsistency is most obvious, perhaps, in the responses to the first five food

groups in item 7: the largest percentage of responses scored "frequently" on item 7 is always in the prenatal group, not in the six-month entry group; in only one of the five groups listed is the response category "frequently" greater for the YMED participants than for the non-YMED participants. Similarly, the Black mothers had the greater percentage of "frequently" scored responses for two food groups, while the White mothers made this response more for three of the food groups.

It appears that in the future, greater emphasis needs to be placed on certain areas of nutrition. This is particularly evident in the need to check and encourage the use of vitamin supplements after commercial formula has been discontinued. It also appears that more efforts should be spent in discouraging the feeding of candy, soft drinks, and sugar water to the young infant. Nevertheless, the evidence that the CDT's can influence the mothers' feeding practices is encouraging, but the evidence also implies the need for expanded service in this area. This need for expanded services is especially true, since additional data indicate that the mothers tend to decide themselves what to feed their infants, rather than take advice from doctors, nurses, dietitians, etc. The informal teaching of the CDT's provides the mothers with reliable nutrition information on a continuing basis, and this information can serve the mothers as a guide from which they can make their own decisions.

Summary of Most Frequently Reported Responses on the Nutrition Questionnaire for Age Periods One Week to Eighteen Months

The mothers' responses to the nutrition questionnaire were analyzed not only at six months but in relation to the age of the child at the time of response--1 week, 1, 3, 6, 9, 12, 13-15, 16-18 months. The most frequently scored response at each of these periods is used as an indication of the usual infant feeding practices of the mothers in the home intervention program. The items and responses are reported in Table 2. The numbers differ for each interval because children reached the ages at different times, and because entry into the program differed for some subjects.

At each period examined, most of the mothers were receiving health supervision for their infants from a health agency which offered care for both the well and sick child. This was supplied primarily by the YMED program and the Neighborhood Health Association which provides comprehensive family health service to families with low incomes. The CDT's were instructed to assist the mothers in making clinic appointments if they did not indicate any agency for health supervision.

Most of the mothers did not breast-feed their infants. The CDT's encouraged breast-feeding when mothers indicated interest in it during the prenatal home visits; however, the very young ages of many of the mothers dictated caution in emphasizing the practice.

A commercial formula, Similac with iron, in the concentrated liquid form, was the kind of milk most frequently fed to the infants during the first three months. This brand was the sample given to the mothers at the time of hospital discharge, and was automatically continued by the mothers. The cost of this formula varied from $.29 to $.39 per 13-ounce can; at the same time evaporated milk was available for $.18 to $.20 per can. The CDT's had been instructed in how to teach the mothers

to prepare an evaporated milk formula; however, they had also been directed not to question the directions of a physician or a clinic before checking with the nutritionists. The only time the nutritionists questioned a physician's order was when the mother did not understand it, and clarification was needed. Since the role of the CDT was to help the mother "cope with her situation," and following medical advice is part of this coping, these directions were continued.

By six months of age, over three-fourths of the infants were receiving whole milk. The major change occurred between the third and fourth month. Seventy-five per cent of the infants were receiving a commercial formula at three months, whereas by four months approximately two-thirds of the mothers reported feeding whole milk.

"At least one day's supply of milk on hand' was the most frequent response made to the question of availability of milk in the home for the infant. In the few instances when enough milk was not available, the CDT's checked to be sure that the mother had sufficient money or credit to purchase the milk or formula, and could get to the store to do so. If this was not possible, the CDT found a way to get the mother some milk, even "borrowing" commercial formula from the Center.

Sixty per cent of the infants were receiving some solid food by one month of age. This was usually either cereal or fruit, and in some instances, both. Commercial baby food was used most frequently until nine months of age, when a combination of table food and commercial baby food was reported more frequently by the mothers. At one year, half the mothers reported feeding only table food to their infants. The instruction given by the CDT's was that the food should be of appropriate texture and consistency, and they explained how to achieve this to the mothers.

When the mothers were asked about the addition of salt to the baby's food, the most frequent response for infants 15 months and younger was "almost never." However, one-half of mothers of infants 16-18 months of age reported the frequent addition of salt to the child's food. Because of possible future consequences, e.g., hypertension, the CDT's were instructed to discourage the mother's use of salt in preparing the infant's food.

The early introduction of solid food in most instances also meant early spoon-feeding, so that by one month the spoon had been introduced to over half the infants. Forty-one per cent of the mothers reported some cup feeding by 6 months, and by 9 months, 86 per cent of them had introduced the cup. Three-fourths of the infants still received some milk from a bottle at 18 months. The CDT's urged the mothers not to feed solids from the bottle because of the possibility of the infant's choking. In most instances this teaching was successful; however, a few of the mothers continued the practice of feeding solids in the bottle by puncturing large holes in the nipples, because they were then sure the infant got all of it. Spoon-feeding was also considered time-consuming by some mothers.

As might be expected, the younger the infant, the more frequently he was fed. The CDT's discouraged too frequent or too infrequent feeding; for example, those mothers who fed their babies every 1-2 hours because the infants were awake or crying, were encouraged to play with them, do their exercises, or give them some water, but to

try to space formula feeding 3-4 hours apart. At the opposite extreme, a few mothers fed their babies less than three times a day, and they were encouraged to feed more frequently.

The most frequent response at each age period examined to "Who usually feeds the baby?" was that the mother does. By 16-18 months, however, only 58 per cent of the mothers responded that they usually fed the babies, whereas at one week 93 per cent had indicated themselves. This is in keeping with the fact that at this time (16-18 months) the infants were attending the Center for a full day, and some of the mothers went to school or work. Since the trainers perceived their roles as one of helping the mothers to be better mothers, much emphasis was placed on the mother's responsibility for the physical health of the child. One aspect of the mother's responsibility was providing her child with adequate nutrition. Therefore, whenever possible, the mother was encouraged to feed her baby herself; if this was not possible, it was stressed that the mother should know who fed the baby, and what foods the baby was fed. The need to give the CDT a 24-hour record of the infant's food intake helped reinforce this teaching.

As an attempt to discourage propping the infant's bottle in the crib as a method of feeding, the CDT's asked the mothers where the baby was fed. Until 9 months of age, most of the infants were fed in someone's arms; from 9-15 months they were fed in a high chair. By 16-18 months infants were sitting in regular chairs to eat.

From birth to three months of age, mothers reported that the doctor was the person most frequently used as the source of advice on diet. After the infants were three months old the mothers indicated that they themselves decided what to feed the baby. The hope is that the dietary decisions of the mothers are influenced by the sound nutrition education given to her on a continuing basis by the CDT's.

While the infants are fed a commercial formula which is supplemented with certain nutrients, most of the mothers do not give an additional supplement. However, after three months, when the majority of infants are changed to plain milk, some of the infants received a nutrient supplement which is continued through 15 months.

When the mothers' responses to the frequency of feeding certain foods is examined, at one month cereal is the first food which is most frequently fed by most of the mothers. This is followed by fruit juice, fruit and vegetables at three months; and, meat, bread, crackers or cookies, combination dishes, soft drinks or sugar water at six months. In addition to these foods, eggs are frequently fed to the infants after nine months. Half the mothers of the 16-18 month-olds also reported frequent feeding of candy and desserts, such as cakes and pies.

The responses to the nutrition questionnaire provide a profile of the infant feeding practices of the mothers in the home intervention program at eight periods in time. Because the CDT's evaluate diet records with the nutritionists each week and make appropriate suggestions to the mothers, it is hoped that this information will provide an opportunity to further evaluate and modify the training and staff education of the CDT's.

Table 2

Percentages of Most Frequent Responses Given to Nutrition Questionnaire at Eight Points in Time: One Week to Eighteen Months

Item	1 Week (N=27)	1 Month (N=40)	3 Months (N=25)	6 Months (N=41)	9 Months (N=28)	12 Months (N=20)	13-15 Months (N=24)	16-18 Months (N=12)
	Most Frequent Response (in percent)							
Who supervises the baby's diet?	Well and Sick Baby Clinic →							
	55	61	68	63	71	60	71	33
Was baby ever breast fed?	No →							
	74	85	64	73	89	95	75	84
What kind of milk is baby now being fed?	Commercial Formula →			Plain Milk →				
	88	87	75	78	86	95	91	92
What brand of commercial formula is used?	Similac →			Not Applicable →				
	93	82	72	80	96	95	83	83
What form of commercial formula is used?	Concentrated Liquid →			Not Applicable →				
	74	70	72	83	96	95	83	83
Is there iron in the formula?	Yes →			Not Applicable →				
	48	45	48	80	93	90	96	97
How much milk or formula was on hand for the baby?	Enough for one day		Enough for more than one day's feeding →					
	52	47	46	49	46	50	39	42
What form of food (other than milk) is baby usually fed?	Not Apply	Commercial baby food →			Commercial baby food and regular family food			
	80	59	75	32	33	50	61	58
Does mother add salt to baby's food?	Almost Never →							Frequently
	96	95	100	90	68	55	78	50
How is baby fed?	Bottle	Bottle and Spoon		Bottle, Spoon and Cup →				
	80	57	92	41	86	85	70	75

Note: Arrows indicate time periods for which response applies, e.g., for third item, "Commercial Formula" applies to 1 week, 1 month, and 3 months; "Plain Milk" applies to 6 months through 18 months.

Table 2 (cont.)

Item	1 Week (N=27)	1 Month (N=40)	3 Months (N=25)	6 Months (N=41)	9 Months (N=28)	12 Months (N=20)	12-15 Months (N=24)	16-18 Months (N=12)
	Most Frequent Response (in percent)							
How many times a day does baby usually eat?	Six Times →			Four Times →		Three Times →		or Four Times
	64	45	46	42	43	45	48	50
Who usually feeds the baby?	Mother →							
	93	92	88	78	79	65	62	58
Where is baby usually fed?	In Someone's Arms →			High Chair →				Regular Chair
	93	92	80	57	50	40	46	67
Who told mother what to feed the baby?	Doctor →			Decided Herself →				
	81	60	58	68	75	85	83	92
Does baby take a vitamin and/or mineral supplement?	No →							
	65	67	64	49	64	50	42	58
How often does the baby eat the following foods?								
Fruit juice	Never →		Frequently →					
	96	87	46	54	64	50	61	50
Fruit	88	72	71	78	61	50	70	66
Vegetables	96	82	58	90	93	95	87	100
Cereal	Never	Frequently →						
	88	60	83	78	71	60	83	83
Meat	Never →			Frequently →				
	96	100	83	68	64	95	95	100
Eggs	Never →			Occasionally		Frequently or Occasionally		
	96	100	71	39	39	45	78	84
Bread, crackers, cookies	Never →			Frequently →				
	96	100	83	46	79	100	95	100
Ice cream	Never →			Occasionally →				
	96	97	71	46	50	50	39	50
Combination dishes	Never →			Frequently →		Occasionally →		
	93	97	50	71	71	50	48	58
Puddings, custards	Never →		Occasionally		Almost Never		Frequently	Occasionally
	96	95	50	51	36	35	30	42
Other desserts, pies, cakes	Never →				Occasionally →			Frequently
	96	100	83	44	39	30	39	50
Candy	Never →				Occasionally		Frequently	
	96	100	83	44	25	40	30	50
Soft drinks, sugar water	Never →			Frequently →				
	92	87	50	34	50	65	74	83

C) Perinatal Group vs Six Month Group - Cognitive Data

The six month scores on the Cattell Infant Intelligence Scale of the children in the perinatal home visit study were compared with the entry scores of children who started in the Children's Center program in their sixth month of life.

Each infant belongs to one of the following program groups:

1) 6 Month Entries Non YMED
   These families received no intervention of any kind until the entry of the infant into the Center program at 6 months.

2) 6 Month Entries YMED
   The mothers of these infants have received some prenatal and postnatal counseling and schooling in the YMED (Young Mothers' Educational Development) Program* for pregnant high school students.

3) Perinatal Non YMED
   The families of these infants have received weekly home visits by a paraprofessional Child Development Trainer (CDT) assigned by the Center to the family from the 6th month of pregnancy onward. Nutrition, health, and child development information are provided to the family.

4) Perinatal YMED
   This group of infants comes from families who have received the prenatal and postnatal Center program of the third group as well as the YMED program of the second group before entry into the Center program at 6 months.

Analyses of the data for the six month comparisons are presented in Table 3. Only black children were used in these analyses because the few white children that were tested (N=19) were unevenly distributed among the groups, with most of them in the six month entry group. It was felt that it would be better to eliminate these children from a study of the effect of the perinatal program so that a possibly confounding variable (that of race of the child) might be controlled. Table 3 shows that the perinatal children scored significantly higher than the six month entries on every comparison. The scoring trends ran as predicted: children with no perinatal intervention scored the lowest; children with the YMED perinatal program scored somewhat higher; and children enrolled in the Children's Center perinatal program scored the highest. It was also evident that sex produced no significant group differences in IQ. The largest difference in score is found between those children who had no perinatal intervention, 101.3 (6 Month Entries Non YMED), and the group that had the Children's Center perinatal program 117.3 (Perinatal group Non YMED).

A careful inspection of Table 3 should lead the reader to some interesting observations about the success of the perinatal program. When the scores of all of the

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* This program is jointly sponsored by the Upstate Medical Center, the Syracuse Board of Education, and the Onondaga County Department of Health, Syracuse, New York, to improve maternal self-concept and maternal and infant nutrition.

Table 3

Six Month Mean Cattell IQ Scores by Sex and

Program Group for Black Infants

Group	N	IQ	SD	t
Perinatal Group	23	114.5	11.6	3.1***
6 Month Entries	35	104.5	13.1	
Perinatal Group Boys	12	113.6	12.2	2.0*
6 Month Entries Boys	16	104.1	13.2	
Perinatal Group Girls	11	115.5	11.4	2.4**
6 Month Entries Girls	19	104.2	13.3	
Perinatal Group YMED	11	111.5	10.8	1.0
6 Month Entries YMED	19	106.6	13.3	
Perinatal Group Non YMED	12	117.3	12.1	3.4***
6 Month Entries Non YMED	16	101.3	12.6	

All t's in the direction of the perinatal group.

* $p < .05$ one tailed
** $p < .025$ one tailed
*** $p < .005$ one tailed

children in the perinatal group were compared with the scores of all the children in the six month entry group a ten point difference was found (significant at the $p < .005$ level). When the effect of the Center program alone was tested, a 16 point difference was found ($p < .005$) between the "pure controls," i.e., those who had no perinatal experience in either the YMED or the Children's Center program, and the children who had only the Children's Center program.

A further inspection of Table 3 uncovers the effects of lack of intervention on 6-month Cattell scores. The six-month entries who received no enrichment prior to entry into the Center, exhibit the lowest IQ scores consistently with respect to the other three intervention groups. The IQ mean for both boys and girls in this group is about 100.

When the scores are ranked in descending order so that potency of input can be examined, some interesting interpretations can be stated. It seems that the inter-

Group 1	Perinatal Group	Non YMED	117.3
Group 2	Perinatal Group	YMED	111.5
Group 3	6 Month Entries	YMED	106.6
Group 4	6 Month Entries	Non YMED	101.3

active effect of the YMED perinatal program with the Children's Center perinatal program does not have a positive effect on the scores on the Cattell. However, when children who have only been in the YMED program are compared with children who have been in no perinatal program, there is a difference in score, though not significant, in the positive direction.

Since it had been predicted (Lally, 1970) that participation in the perinatal home visit program would produce more successful test performance, the data reported above tend to confirm that hypothesis. The high levels of significance attained in these analyses, despite comparatively small numbers of infant scores in program cells, are encouraging. The results lead us to assert the developmentally-enhancing effect of intervention and enrichment when delivered from the prenatal period onward, especially when such service is supplied very early to the total family as well as to the individual child.

Infant Program:

This section deals with data collected at various points in time on children in a four hour a day, five day a week center-based program that is supported by weekly visits to the families of the children. The home visit program was described in an earlier section. The infant program is more fully described by Honig (Lally 1970) in the 1970 progress report on the Children's Center to the Children's Bureau H.E.W.

Briefly the infant program emphasizes:

A. Development of prehension: Grasping behavior.
   1. Reaching for toys.
   2. Shaking toys.
   3. Hitting suspended toys
   4. Pulling suspended toys.
   5. Squeaking toys.

B. Development of object permanence: Concept that an object exists independent of a child's own actions.
   1. Playing peek-a-boo.
   2. Horizontal following of toys.
   3. Finding toys after visible displacements under screens.
   4. Finding toys after invisible displacements under screens.
   5. Putting toys into containers and finding toys under containers.

C. Development of means for achieving desired environmental ends: Using objects as instruments in attaining goals.
   1. Reaching over obstacles for toys.
   2. Using a support, such as a pillow, to obtain a toy placed on top of the support, but out of the child's reach.
   3. Using a string horizontally to obtain a toy tied to the string.
   4. Using a string vertically to obtain a toy tied to the string.
   5. Putting a chain into a box.
   6. Using a stick to obtain an object.

D. Development of new schemas in relation to objects: Ways of acting on objects.
   1. Hitting two toys together.
   2. Patting a toy.
   3. Making a doll walk.
   4. Stretching an elastic bracelet.
   5. Throwing toys.

E. Development of causality: Forming a distinction between act and external result.
   1. Bringing an unseen object to sight.
   2. Ringing a bell to make a sound.
   3. Turning a key to make a mechanical toy run.
   4. "Zooming" a friction car to make it go.
   5. Working a Jack-in-the-box.

F. Developmental achievement of the construction of the object in space: Conceiving of a single, objective space within which all objects are contained and inter-related.
   1. Finding a toy by its sound.
   2. Following the trajectory of a toy.
   3. Bunching a chain and putting it into a box.
   4. Nesting several boxes.
   5. Rolling objects down a plane.

G. Development of gestural imitation.
   1. Imitating a familiar visible gesture, such as pat-a-cake.
   2. Imitating an unfamiliar visible gesture, such as a crooked finger.
   3. Imitating a familiar invisible gesture, such as tilting the head back and forth.
   4. Imitating an unfamiliar invisible gesture, such as an eye wink.

H. Development of verbal learning.
   1. Imitating baby sounds.
   2. Imitating unfamiliar sounds, such as "la-la."
   3. Labeling objects, people, feelings, and actions.
   4. Listening to stories.

I. Physical development and exercises.
   1. Stretching and flexing legs.
   2. Rolling body into a ball.
   3. Rocking on the stomach.
   4. Doing somersaults.
   5. Bouncing the body to music.
   6. Bending to pick up objects.
   7. Pulling up on heavy furniture.

J. Development of sense organs.
   1. Producing and listening to sounds (music boxes, rattles, wrist bells, records, tapes, etc.).
   2. Producing tactual experiences (feel boxes, fur collars, nylon net, styrofoam, etc.)
   3. Producing kinesthetic experiences (swinging, tickling with a feather, running a hair brush along the arm, etc.)
   4. Producing visual experiences (looking at pictures, books, mobiles, etc.

In addition to the specific content areas outlined above, there are several general aspects which characterize the teaching with the 6- to 15-month infants. Of particular importance is the emphasis placed on taking advantage of care-taking times, such as diapering, feeding, and bathing, for the teacher to work with each child on a one-to-one basis. Sensitivity to the baby's performance on tasks is also stressed so that there is a close match between developmental level attained and level of task presented. Finally, the teachers are aware of the importance of meeting the infants' emotional needs, including promoting a good self-concept. Face-to-face talking, fondling, praise, and floor-level mirrors all contribute to this aspect of the child's development.

A) Infant Program - Socialization Variables

There has been a strong emphasis toward the development of cognitive skills in many intervention programs. As part of a growing concern for the reintegration of affect and cognition in child development research, the Children's Center has developed a number of socialization variables. We are searching for social, emotional variables, and clusters of these, which can serve as predictors of achievement scores of infants on language scales, Piagetian scales, and developmental scales. These variables have been derived from two observational instruments currently used for program monitoring and feed-back, one instrument which depends entirely on interview responses, and one which is mixed. The usefulness of such predicators has been indicated by the recent work of Golden and Birns (1970). A description of the forms used and the variables selected follows.

1. Weekly Home Visit Report(WHVR)

This observational instrument consists of sixty items. Each week the Child Development Trainers (CDT's) are expected to make a home visit to each mother in their caseload. If such a visit is made and it is successful, the CDT then completes the form

from her recollection of the visit. The form is not filled out in the home in order to save time in the home and to maintain rapport with the mother. If, on the other hand, the CDT's attempts to visit the home were unsuccessful, the form is so constructed to indicate the reason. Thus, there is a WHVR available every week for each mother-child dyad enrolled in the Center program.

From these reports it is possible to derive the following simple tallies:

(a) total possible number of home visits
(b) number of visits actually completed
(c) number of visits made with mother present rather than a substitute mothering figure
(d) number of visits made while the baby was present
(e) number of visits made with both mother and infant present

These tallies are converted into seven percentages:

HV1. percent successful visits of total visits actually made
HV2. percent successful visits with baby present of total visits actually made
HV3. percent successful visits with mother and infant present of total visits actually made
4. percent successful home visits of total possible visits
5. percent visits with mother present of total possible visits
6. percent visits with baby present of total possible visits
7. percent visits with mother and baby present of total possible visits.

Because of redundancy of data, only percentages in categories 1, 2, and 3 were retained. These provide a gross but non-obtrusive measure of program penetration.

In an effort to obtain a more focused indication of certain qualitative features of the home visit, five variables were derived by grouping a number of items into clusters. Variable means were computed based on the number of visits for which the data were available. The inclusion of items into a variable was rationally determined by unanimous agreement of four staff researchers. Each item, and consequently each variable mean, has been scored so that a higher score is indicative of a more positive response. The five variables thus developed (in addition to the first 3 listed above) were named according to item content included in each.

HV4. maternal positive cooperation
HV5. emotional interactive behaviors between mother and infant
HV6. language interactive behaviors between mother and infant
HV7. success of CDT in establishing a working relationship with the family
HV8. mother's interaction with program concepts

Thus, eight variables, or clusters of items, were coded from the Weekly Home Visit report.

2. The Implicit Parental Learning Theory Scale (IPLET)

This instrument is designed to help identify the implicit learning theories of a mother as they are expressed in her manner of handling a wide variety of child behaviors. Forty-five of these behaviors appropriate for each of the early age periods (1 through 4 years) are cast in the form of declarative statements (i.e., cries when you leave him with baby-sitter). The interviewer inquires for each item--whether the mother would encourage or discourage the behavior, or whether she would not care one way or another. The coding system permits analysis of the maternal teaching strategies. For this analysis IPLETS for parents of one-year-olds were used. The twenty-seven inductively constructed categories into which responses are coded have been broadly grouped as:

IP 1. maternal warmth: positive responses toward child
IP 2. maternal teaching strategies
IP 3. maternal punitive responses
IP 4. maternal "do-nothing" responses

The percent of total response codes represented by each of these variables was then computed.

3. The Inventory of Home Stimulation (STIM)

This instrument consists of seventy-two items which are either inquired about or observed in the home. A trained para-professional staff member (who administers the IPLET as well), records this data in the home while the child is awake and can be observed interacting with his mother. A factor analytic study of these seventy-two items (Caldwell and Sherrill, 1970) yielded seven identifiable factors. Four Children's Center staff members agreed unanimously on the following names for items represented in each of the following factors:

SF 1. positive emotional and verbal home climate
SF 2. positive emotional parental behaviors
SF 3. environmental regularity
SF 4. toy variety
SF 5. locale variety
SF 6. active promotion of cognitive advances
SF 7. strong family interaction

Two types of incomplete factor scores were calculated for each factor. In type 1, each significant non-zero loading was converted to unity and tallied into a factor score. As a contrast and check on this method, a second factor score was calculated by summation of the squared factor loadings for each significant item.

$$\text{I. Factor Score}_i = \sum_{k=1}^{n} \text{Item Score}_{ik} \times 1.0$$

$$\text{II. Factor Score}_i = \sum_{k=1}^{n} \text{Item Score}_{ik} \times \text{Factor Loading}_{ik}^2$$

4. Bayley Scales of Infant Development: Infant Behavior Record

The Infant Behavior Record is an observational schedule which is completed immediately after the administration of a standardized developmental scale (the Cattell Infant Intelligence Scale, in our program). This Infant Behavior Record contains twenty-eight items which are primarily focused upon the social interaction between tester and infant during the test situation. A regrouping of these items produced four rationally based variables:

BV 1. child's response to novelty in the testing situation
BV 2. social interaction with tester
BV 3. child's task involvement
BV 4. child's motoric activity

Each of the 28 items in the Record has a number of alternative responses. These responses were converted to dichotomized scores, that is, either a positive or a negative behavior was tallied in relation to each specific item. Both positive and negative scores were tallied for each of the four variables. These tallies were then converted into ratios of positive to total behaviors for each of the four variables listed above.

A series of Stepwise Multiple Regression Analyses was carried out to determine possible relationships between the socialization variables and cognitive variables within the experimental sample. The number of twelve-month-olds for whom complete data were available was only 29 infants. Clearly, this sample is not large enough to consider a factor analysis of the data. The multiple regression analysis yields a multiple R value which can be squared to determine the proportion of variance as it is added to the regression equation. For this particular series of analyses the F level criterion to include or delete any one variable was set to zero. This has the effect of forcing all variables into the regression equation. The computational procedures for these analyses were provided by the Syracuse University Computing Center utilizing the TSAR (Tele-Storage and Retrieval) System statistical package.

1. Weekly Home Visit Report (WHVR)

Table 4 shows the intercorrelations of WHVR variables with each other and with the two criterion variables used: Cattell Infant Intelligence IQ and Infant Piagetian Scales Total Score. Percent successful visits (HV1) and percent successful visits with baby present (HV2) were the WHVR variables significantly correlated with Cattell IQ scores. Maternal Language Interaction score (HV6) and Maternal Emotional Interactive Behavior with Baby (HV5) were the WHVR variables which correlated significantly with the total Piaget score. Tables 5 and 6 summarize the multiple regression analysis for WHVR variables with Piaget and Cattell scores and present the order of inclusion. This order is determined in computation by solving a set of simultaneous equations to determine which variable will account for the greatest reduction in the error sums of squares. This order will not necessarily always replicate the rank order of the product-moment intercorrelations, since covariance effects may affect this order. It can be seen that HV6 and HV1 enter into the multiple regression equations first respectively for the prediction of Piagetian and of Cattell IQ scores.

Table 4

Product-Moment Intercorrelation Matrix for Weekly Home Visit Report Variables

with Two Criterion Variables for 29 Center Infants

		HV 1	HV 2	HV 3	HV 4	HV5	HV 6	HV 7	HV 8	PTOT	Mean	S.D.
HV 1	% Successful visits										0.72	0.20
HV 2	% Successful visits w/baby	.62									0.69	0.20
HV 3	% Successful visits w/mo. & baby	.80	.83								0.64	0.21
HV 4	Maternal Cooperation	.12	.15	-.13							18.04	10.00
HV 5	Emotional Interactive Behavior	-.02	-.01	-.44	.39						35.81	18.39
HV 6	Language Interactive Behavior	-.09	-.05	-.49	.37	.47					24.47	11.42
HV 7	CDT Working Relation w/family	-.10	-.12	-.24	.48	.58	.60				13.56	2.86
HV 8	Interaction w/Program Concepts	.13	.23	-.01	.90	.23	.21	.32			7.53	3.57
PTOT	Piaget Total Score	.22	.23	-.14	-.02	.45*	.46*	-.07	-.06		99.17	20.82
CATL	Cattell I.Q. Score	.44*	.37*	.06	.28	.33	.33	.07	.17	.58*	105.34	13.85

* $p < .05$; $r > 0.3557$, n=29.
Significance of r with criterion variables only has been noted.

Table 5

Summary Table of Stepwise Regression Analysis for Weekly Home Visit Report Variables with Piaget Total Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	HV 6	.4571	.2089		7.13
2	HV 7	.6301	.3970	.1881	8.11
3	HV 1	.6743	.4547	.0577	2.64
4	HV 3	.6965	.4851	.0304	1.42
5	HV 4	.7134	.5089	.0612	1.11
6	HV 2	.7391	.5463	.0374	1.81
7	HV 5	.7399	.5475	.0012	0.06
8	HV 8	.7408	.5488	.0013	0.06

Table 6

Summary Table of Stepwise Regression Analysis for Weekly Home Visit Report Variables with Cattell IQ Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	HV 1	.4355	.1897		6.32
2	HV 3	.6483	.4203	.2306	10.35
3	HV 2	.6528	.4261	.0058	0.25
4	HV 4	.6540	.4277	.0016	0.07
5	HV 8	.6601	.4357	.0080	0.33
6	HV 5	.6640	.4409	.0052	0.21
7	HV 6	.6691	.4477	.0068	0.30
8	HV 7	.6744	.4548	.0071	0.26

It is of interest that maternal language interactive behaviors (HV6) seem to relate most highly to the total Piaget score which itself includes a measure of child language production and imitation behaviors as one of the scales. Additionally, the CDT's working relation with the family (HV7) contributed an 18.8% increase in the shared variance accounted for. Maternal Cooperation (HV4) enters the regression equation at step 5 and increases the percent of variance accounted for by 6%.

Table 5 indicates that the eight variables of the WHVR have a multiple R of .7408, which accounts for 55% of the total Piaget score. Table 6 indicates that for the Cattell IQ score the multiple R with WHVR variables is .6744, which accounts for 45% of the IQ score. The nonobtrusive measures contribute most strongly to this relation. Percent successful home visits alone and considered with mother and baby present, account for 42% of the variance. The finding that such nonobtrusive measures which are far more economical than interview or test measures are effective as predictors of child scores is an important result of this type of analysis.

2. IPLET (The Implicit Parental Learning Theory Scale)

Tables 7, 8, and 9 present data concerning the relationships between the IPLET variables and the two criterion variables. There are no significant intercorrelations, as indicated in Table 7. This lack of any relationship is mirrored in Table 8 where the multiple R for all four variables is 0.1094 which only accounts for 1% of the variance in the Piaget total score. The relationship is little improved with the Cattell. In Table 9 the maximum multiple R is 0.2331, which accounts for 5% of the variance in the Cattell IQ score. Thus maternal methods of shaping changeworthy behaviors at one year do not seem related to developmental measures of the child at one year. Kagan and Moss (1962) have suggested that such maternal measures may be correlated, however, with later developmental scores.

3. Inventory of Home Stimulation (STIM)

The relationships between the STIM variables and the two criterion variables are presented in Tables 10, 11, and 12. Table 10 shows only one significant intercorrelation which is between the total STIM score and the total Piaget score. The regression summary Tables 11 and 12 do, however, present some interesting relationships.

In Table 11 the multiple R for all STIM variables and the Piaget total score is 0.5005, which accounts for 25% of the variance in the Piaget total score. In this particular analysis the total raw score for the STIM was also considered as a relatively independent variable, since the other seven scores were empirically derived from a factor analytic study. This total STIM score is the first entry into the regression equation for the Piaget. This variable alone accounts for 15% of the Piaget score variance. The next two variables SF5 (locale variety) and SF6 (active facilitation of cognitive development) increase this amount by almost 7%. This finding seems to be indicating an important relationship, since the Piaget instrument is a measure of cognitive abilities, and these two variables (SF5 and SF6) can be considered as cognitively stimulating elements in the child's environment. Also note that SF4 (toy variety) can be considered as cognitively stimulating. Although it is not entered into the regression equation until step 6, it does account for more variance in the criterion than the remaining variables (SF1, SF2, SF7, and SF3).

Table 7

Product-Moment Intercorrelation Matrix for IPLET Variables with Two Criterion Variables for 29 Center Infants

		IP 1	IP 2	IP 3	IP 4	PTOT	Means	Std Dev.
IP 1	Warm Responses						0.27	0.05
IP 2	Explaining & Teaching	-.15					0.46	0.10
IP 3	Punitive Responses	-.52	-.16				0.41	0.07
IP 4	Do Nothing Responses	.20	-.43	-.42			0.08	0.04
PTOT	Piaget Total Score	-.06	.01	-.04	.05		99.17	20.82
CATL	Cattell I.Q. Score	.07	-.05	.07	.11	.58*	105.34	13.85

* $p \leq .05$; $r > 0.3557$, $n=29$.
Significance of r with criterion variables only has been noted.

Table 8

Summary Table of Stepwise Regression Analysis for IPLET

Variables with Piaget Total Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	IP 1	.0585	.0034		0.09
2	IP 3	.1051	.0110	.0076	0.20
3	IP 4	.1093	.0119	.0009	0.02
4	IP 2	.1094	.0120	.0001	0.01

Table 9

Summary Table of Stepwise Regression Analysis for IPLET

Variables with Cattell IQ Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	IP 4	.1063	.0112		0.31
2	IP 3	.1630	.0266	.0154	0.41
3	IP 1	.2079	.0432	.0166	0.43
4	IP 2	.2331	.0543	.0111	0.28

Table 10

Product-Moment Intercorrelation Matrix for STIM Variables with Two Criterion Variables for 29 Center Infants

		SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7	STOT	PTOT	Means	S.D.
SF 1	Pos. Emot. & Verb. Home Climate										2.95	0.79
SF 2	Pos. Emotional Behaviors	.25									1.66	0.25
SF 3	Environmental Regularity	.32	.18								1.48	0.34
SF 4	Toy Variety	.11	-.23	.41							1.27	0.43
SF 5	Locale Variety	.23	-.14	-.03	.11						0.82	0.24
SF 6	Active Prom. Cogn. Advmt.	.49	.36	.42	-.07	.30					1.32	0.44
SF 7	Strong Family Interaction	.22	.31	.42	-.07	.09	.55				1.23	0.42
STOT	Total Stim Score	.78	.44	.67	.33	.22	.71	.47			48.28	7.21
PTOT	Total Score Piaget Scales	.27	.17	.30	.14	-.14	.17	.16	.40*		99.17	20.82
CATL	Cattell I.Q. Score	.19	.27	.17	.02	.07	.15	-.14	.25	.58*	105.34	13.85

* $p < .05$; $r > 0.3557$, $n=29$.
Significance of r with criterion variables only has been noted.

Table 11

Summary Table of Stepwise Regression Analysis for STIM Report Variables with Piaget Total Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	STOT	.3961	.1569		5.03
2	SF 5	.4582	.2099	.0530	1.75
3	SF 6	.4718	.2226	.0127	0.41
4	SF 1	.4756	.2262	.0036	0.11
5	SF 2	.4797	.2301	.0039	0.12
6	SF 4	.4916	.2417	.0116	0.33
7	SF 7	.4969	.2469	.0052	0.15
8	SF 3	.5005	.2505	.0036	0.09

Table 12

Summary Table of Stepwise Regression Analysis for STIM Report Variables with Cattell IQ Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	SF 2	.2652	.0703		2.04
2	SF 7	.3532	.1248	.0545	1.62
3	STOT	.4389	.1926	.0678	2.10
4	SF 3	.4505	.2030	.0104	0.31
5	SF 4	.4611	.2126	.0096	0.28
6	SF 1	.4642	.2155	.0029	0.08
7	SF 6	.4646	.2158	.0003	0.01
8	SF 5	.4648	.2160	.0002	0.00+

This relationship between the STIM and the Piaget is an interesting contrast to the data presented in summary Table 12. The relationship between the Cattell and the STIM appears to focus on the affective factors of the STIM. The multiple R for all eight variables on the STIM is 0.4648, which accounts for 21% of the variance. Notice, however, that the first four variables have a multiple R of 0.4505, which is 20% of the variance in the Cattell. As one would expect, the total STIM score is one of the first four. The remaining three variables, however, SF2, SF7, and SF3, are largely affective rather than cognitive factors. This differentiation between the Piaget and the Cattell is important, especially when considering the moderate correlation of 0.58 between the two instruments.

4. Bayley Scales of Infant Development: Infant Behavior Records

The data presented in Tables 13, 14, and 15 indicate a low level relationship between the Bayley variables and the two criterion variables. There are no significant intercorrelations between predictor and criterion variables in Table 13. The relationship between all Bayley variables and the Piaget total score, as indicated by a multiple R of 0.2288 in Table 14, only accounts for 5% of the variance in the criterion. In Table 15 the multiple R between all Bayley variables and the Cattell IQ score is 0.3010, which accounts for 9% of the variance in this criterion. The narrow focus of the Bayley variables, which reflects only infant behavior in the testing situation, where optimization of child comfort and interest is a paramount consideration prior to testing, may affect the lack of predictor significance of these variables.

Although the relationships are low, it is important to point out that variable BV 3 (child's task involvement) is the first of the Bayley variables to enter both regression equations. Schaefer (1971), in a factor analytic study of the Bayley Infant Behavior Record, empirically identified a factor which he termed Task Orientation, which was also related to the Bayley Mental and Motor Scales. In keeping with the contrast between the Piaget Scale and the Cattell instruments, notice that BV 4 (motoric score) increases the variance accounted for by almost 5% in the Cattell analysis (Table 15), while in the Piaget analysis (Table 14), this variable (BV 4) had nothing to contribute.

5. Additional Variables

Four additional variables were also grouped together and analyzed by the stepwise multiple regression package.

AV 1. number of days' attendance at the Center
AV 2. baby's age in days
AV 3. mother's last grade in school
AV 4. mother's age in years.

Data concerning the relationship between these variables and the two criterion variables are presented in Tables 16, 17, and 18.

Table 16 indicates two significant and negative correlations. Mother's age (AV4), is negatively correlated with the Piaget score, and Baby's age (AV2) is negatively correlated with the Cattell score. The relationship found between the baby's age and the Cattell is difficult to explain for this sample, since there was a standard deviation of only 12 days for the year-old infants tested, and the Cattell considers age in its IQ computation. The correlation between mother's age and the Piaget suggests that younger mothers have more of an effect upon the cognitive development of their children

Table 13

Product-Moment Intercorrelation Matrix for BAYLEY Variables with Two Criterion Variables for 29 Center Infants

		BV 1	BV 2	BV 3	BV 4	PTOT	Means	Std Dev.
BV 1	Ch. Resp. to Novelty in Test						0.66	0.27
BV 2	Soc. Interaction w/Tester	.91					0.75	0.31
BV 3	Chld. Task Involvement	.80	.67				0.63	0.25
BV 4	Motoric Score	.56	.54	.62			0.58	0.26
PTOT	Piaget Scales Total Sc.	.14	.06	.19	.12		99.17	20.82
CATL	Cattell IQ Score	.06	.02	.18	-.06	.58*	105.34	13.85

* $p < .05$; $r > 0.3557$, $n=29$.
Significance of r with criterion variables only has been noted.

Table 14

Summary Table of Stepwise Regression Analysis for BAYLEY

Variables with Piaget Total Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	BV 3	.1858	.0345		0.97
2	BV 2	.2044	.0418	.0073	0.19
3	BV 1	.2269	.0515	.0097	0.26
4	BV 4	.2288	.0523	.0008	0.02

Table 15

Summary Table of Stepwise Regression Analysis for BAYLEY

Variables with Cattell IQ Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	BV 3	.1796	.0322		0.90
2	BV 4	.2836	.0804	.0482	1.36
3	BV 1	.3008	.0905	.0101	0.28
4	BV 2	.3010	.0906	.0001	0.00+

Table 16

Product-Moment Intercorrelation Matrix for ADDITIONAL Variables with

Two Criterion Variables for 29 Center Infants

	AV 1	AV 2	AV 3	AV 4	PTOT	Means	Std. Dev.
AV 1	Days attendence at Center					82.66	24.07
AV 2	.05	Baby's age in days				364.90	12.28
AV 3	-.21	-.17	Mother's last grade in school			10.10	1.21
AV 4	.16	.24	-.41	Mother's age		19.66	6.00
PTOT	.09	.10	.21	-.41*		99.17	20.82
CATL	.22	-.48*	.08	-.32	58*	105.34	13.85

* $p < .05$; $r \geq 0.3557$, n=29.
Significance of r with criterion variables only has been noted.

Table 17

Summary Table of Stepwise Regression Analysis for STEPWISE

Variables with Piaget Total Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	AV 4	.4108	.1688		5.48
2	AV 2	.4585	.2102	.0414	1.37
3	AV 1	.4846	.2348	.0246	0.80
4	AV 3	.4927	.2428	.0080	0.25

Table 18

Summary Table of Stepwise Regression Analysis for STEPWISE

Variables with Cattell IQ Score as Criterion

Step No.	Variable Entered	Multiple R	Multiple RSQ	RSQ Increase	F Value at Entry
1	AV 2	.4755	.2261		7.89
2	AV 1	.5359	.2872	.0611	2.23
3	AV 4	.5922	.3507	.0635	2.44
4	AV 3	.5940	.3528	.0021	0.08

than older mothers. This suggestion is difficult to assess in connection with other findings. It may be a function of the very narrow age range of Center mothers. Also, it may reflect one of the program's hypotheses that younger mothers will be more amenable to suggestions and ideas about child rearing and developmental facilitation offered by Center personnel.

The relationships between mother's age and Piaget score is reflected in Table 17. Mother's age is the first variable to enter the regression equation with a multiple R of 0.4108, which accounts for 17% of the variance in the criterion. Baby's age (AV2), when added to the regression equation, increases the proportion of variance accounted for in the Piaget by 4%. This is a reasonable finding, since the Piaget scales are ordinal in nature. Number of days in attendance accounts for about 2% of the variance in the criterion.

The relationships in Table 18 are much easier to interpret. Baby's age (AV2) is the first variable to enter the regression equation with a multiple R of 0.4755, which accounts for 22% of the variance in the Cattell IQ score. The addition of days in attendance (AV1) raises the multiple R to 0.5359 for an increase of 6% in variance accounted for. Mother's age (AV4) also accounts for 6% of the variance in the Cattell. Note that mother's last grade in school (AV3) accounts for very little variance in both the Cattell and the Piaget analysis. This appears to be largely due to the narrow range of the distribution of the sample which has a mean of 10.10, and a standard deviation of 1.21.

Discussion

In spite of the small sample size, several important relationships seem to be emerging between the socialization variables and the cognitive measures. The Piagetian measure is related to six of the eight variables in the WHVR, three of the eight variables in the STIM, and three of the four additional variables. This seems to indicate that the relationships between the cognitive processes as measured by the Piagetian scale and the socialization process variables of the environment can be plotted. Similarly, the developmental IQ as measured by the Cattell scales appears to be related to three of the eight WHVR variables, four of the eight STIM variables, two of the four Bayley variables, and three of the four additional variables. The fact that different clusters of variables tended to be related to the two different criterion measures suggests that they do in fact measure different aspects of intellectual development, and that these differing aspects are contingent upon differing antecedent or correlative conditions.

A word of caution, however, seems necessary. The mapping of a multivariate domain is the function of factor analysis. These data, although interesting and in some cases impressive, must be considered tentative and suggestive rather than conclusive. As the program continues and more data are accumulated, these data should provide valuable information in designing factor analytic studies.

B) Infant Program - Developmental Data

The Cattell Infant Intelligence Scale was used to collect developmental data on twenty-four center infants at three data points, 6, 12, and 18 months. These infants were in the six-month entry group (described in the perinatal section), and none of the children had been enrolled in the Children's Center perinatal program. Data are also reported on other infants from the same program group that did not have tests at all three points. The most common reason for missing data was that the children had not reached 18 months of age at the time of analysis. Table 19 contains the numbers tested, IQ's and SD's at the various test times grouped by race and sex on all the infants described above. Table 20 contains t test results when groups are compared with each other. Only at 12 months were significant differences found between groups. Black girls scored higher than black boys.

Tests for differences over time were not run using these groups because small changes in cell composition radically influenced trends, particularly at the 18 month test point. A separate analysis was run presenting data in four different groupings so that only those children with complete data sets would be compared with each other. Inspection of Table 21 reveals that there was no significant change in mean developmental score between 6 and 12 months. Twenty-two of the forty-two infants increased in score an average of 13.3 IQ points, 2 infants attained the same scores, and 18 infants declined an average of 9.9 IQ points. Male and female infants contribute equally to the groups whose IQ scores are higher or lower at 12 months compared to their six month scores. Likewise, black infants are represented entirely in proportion to their total Center population frequencies in both the declining and increasing groups from 6 to 12 months. Of the 18 infants whose Cattell scores declined between 6 and 12 months, the 18 month scores are available for 13. Two of these infants declined, and 11 increased their scores from 12 to 18 months.

The mean test-retest score difference between 6 and 18 months of 11.4 IQ points for 24 infants, is significant beyong the .002 level. Similarly the test-retest score difference between 12 and 18 months for 26 infants is 11.3. Table 21 reveals that this gain from 12 months is significant beyond the .002 level. Of the 26 infants for whom test-retest scores are available between 12 and 18 months, only 3 declined and 23 increased in score.

These scoring trends become clearer when we look at the data in Table 21 for the infants for whom 6, 12, and 18 month IQ scores are available. There is no change in mean IQ score for infants who have attended the center program for fewer than 6 months. There is a highly significant increase in IQ scores for infants who remain in the program for an additional 6 month period. This increase should be viewed in the context of the consistent declines in IQ test scores with increasing age which have been reported by investigators of infants from low socio-economic groups. Golden and Birns (1968) report cross-sectional Cattell IQ scores for both a welfare and a low socio-economic group of black infants at 12, 18, and 24 months. A progressive decline in mean IQ from 111 to 99 was found in both disadvantaged groups. Caldwell, et al., (1968), also using the Cattell Scale, report a similar continuous and regular decline in IQ (from nearly 120 to 98) for the low-income infants tested. These data were collected in a longitudinal study without intervention conducted at the Children's Center with tests at 6, 12, 18, and 24 months. Shaefer and Furfey (1967) similarly report

Table 19

Mean Cattell IQ Scores by Age, Sex, Ethnicity

Children's Center Group	Age at Testing								
	6 Months			12 Months			18 Months		
	N	IQ	SD	N	IQ	SD	N	IQ	SD
Black boys	16	104.1	13.2	17	100.3	8.7	14	110.9	6.6
Black girls	19	104.2	13.3	20	112.2	13.2	7	115.0	12.3
Total Black	35	104.1	13.1	37	106.7	12.7	21	112.3	8.8
White boys	7	96.1	16.5	5	104.0	17.5	3	112.3	18.0
White girls	6	107.5	15.4	5	102.8	6.4	2	124.0	7.1
Total White	13	101.4	16.2	10	103.4	12.4	5	117.0	14.7
Total boys	23	105.2	14.9	22	101.2	10.9	17	111.2	8.7
Total girls	25	107.9	13.8	25	110.3	12.6	9	117.0	11.6
Total group	48	106.5	14.4	47	106.0	12.6	26	113.2	10.0

Table 20

t Tests of Cattell IQ Scores by Age, Sex, and Ethnicity

Children's Center Group	Age at Testing		
	6 Months	12 Months	18 Months
Black boys vs. Black girls	0.03	3.2** A.	1.0
Black boys vs. White boys	1.2	.66	.25
Black girls vs. White girls	0.54	1.5	.96
White boys vs. White Girls	1.3	.14	.84
Total Black vs. Total White	.61	.73	.95
Total boys vs. Total girls	.84	2.6* A.	1.4

See Table 19 for number of Ss per group
A - Girls score higher than boys
* $p < .02$
** $p < .1$ } 2 tail tests

Table 21

Mean Cattell IQ Scores, *t* Tests, and Correlations

at 3 Ages for Center Children

Age in Months	N	IQ	SD	*t*	*r*
6	42	103.3	14.45	-1.2	.45***
12		106.0	12.5		
6	24	102.4	11.2	-3.7****	.03
18		113.8	9.96		
12	26	101.9	9.4	-5.9****	.48**
18		113.2	9.98		
6	24	102.4	11.2	*t* 6 mo.12 mo.=0.0	*r* 6 mo.12 mo.=.53**
12		102.4	9.47	*t* 6 mo.18 mo.=3.67****	*r* 6 mo.18 mo.=.03
18		113.8	9.96	*t* 12 mo.18 mo.=5.45****	*r* 12 mo.18 mo.=.44*

* $p < .05$
** $p < .02$
*** $p < .01$
**** $p < .002$
} 2 tail tests

such a decline in a control group of disadvantaged black infants (tested at 14 and again at 21 and 27 months) from a mean IQ of 109 to 90 to 89. Thus, in contrast, the effect of the Children's Center intervention program seems to be an initial "holding effect" during the early period, where IQ fluctuations occur. Yet a relatively high test-retest 6 to 12 month IQ correlation coefficient (r=.53, Table 21) is obtained, and no downward drift in IQ is observed as might be expected from the above citations. This six to twelve month period is followed by a significant increase in IQ scores at the 18 month test. Concommitantly, the correlation of 6 and 18 month test scores drops to r=.03, as seen in Table 21. This zero correlation is in marked contrast to Cattell's findings (1940). She followed 10 infants who scored high, and 10 infants who scored low at 3 months. The 6, 12, and 18 month retest scores she reports indicate a highly consistent score placement in IQ deciles above and below 100 for the infants from each group at each testing age. This expected high correlation between 6 and 18 months scores has been broken up in the Center population of infants.

These encouraging findings coupled with the perinatal data strongly support early intervention as a means for enhancing cognitive development. It will be of interest to see the scores of the children from the perinatal groups at 12 months. Will they too not change much in score from 6 to 12 months, or will their scores, because of their early stimulation, continue to climb?

Additional Studies

A) Comparisons of Group Performance on Individual Items of the Peabody Picture Vocabulary (PPVT)

PPVT's of 219 Children's Center children were examined in order to ascertain differences in the ways that children respond to individual test items as a function of age, sex, race, and socio-economic status (SES). The cell breakdown is as follows:

	Males				Females				
	Black		White		Black		White		
Age	Low	Mid	Low	Mid	Low	Mid	Low	Mid	Totals
2-3 to 2-11	5	2	7	3	9	3	7	7	43
3-0 to 3-8	7	3	9	10	9	3	9	6	56
3-9 to 4-5	11	4	7	11	9	4	8	11	65
4-6 to 5-2	5	1	8	11	12	3	7	8	55
Totals	28	10	31	35	39	13	31	32	N = 219

Each age group was analyzed independently of the other three. Only the first two age groups are discussed in this presentation. A more comprehensive report of these results and the results of the two older age groups is in progress.

For the main effects of ethnicity and of sex, and for the interaction of ethnicity and sex, it was hypothesized that there would be no significant differences between groups. Since no differences and, thus, no direction were predicted, a two-tailed test of significance was used, with significance established at the $p < .05$ level. However, for the main effects of SES, and for the interactions of SES and ethnicity, and SES and sex, it was hypothesized that the middle SES groups would perform significantly higher than the lower SES groups. A one-tailed test was used to establish significance between the SES groups, and significance was set at the $p < .025$ level. This more conservative level for significance was selected in order to lend greater credibility to any predicted differences which occurred. What follows is an examination of the items for which there were significant differences. The percent of subjects answering each item correctly is the number used in comparing groups on items.

Age 2-3 to 2-11

Main Effects

1. Ethnicity: At no point is the difference between the black and the white groups significant. The groups performed similarly, with neither group appearing to do better than the other.

2. Sex: The trends for the male and female groups are also similar, with neither doing noticeably better than the other. There was a significant difference between boys and girls on the following:

#	item	Male %	Female %
12.	lamp	0	42

3. SES: There were very obvious differences between the performance of the middle and the lower SES groups. The middle group had a higher percentage of correct answers on all but two items. There were significant differences between the groups on the following 8 items:

#	item	Middle %	Middle %	#	item	Middle %	Lower %
8.	children	93	57	27.	peeking	53	14
16.	ring	73	29	31.	sail	53	14
17.	nail	80	39	34.	skiing	47	7
26.	engineer	73	32	35	hook	40	4

The lower and middle SES groups performed very similarly on:

#	item	Middle %	Lower %
10.	turtle	87	89
14.	jacket	73	68
18.	hitting	47	43

Interactions

1. Lower SES black vs. lower SES white vs. middle SES white. (There were insufficient n's in the middle SES black group to use them in this comparison): The middle white group performed better on all except seven of the items.

a. The differences between the middle white group and the lower black group were significant on the following item:

#	item	Middle White %	Lower Black %
17.	nail	80	29

b. The middle SES white group and the lower SES white group were significantly different on:

#	item	Middle White %	Lower White %	#	item	Middle White %	Lower White %
8.	children	100	43	24.	baking	80	14
16.	ring	60	7	26.	engineer	70	14
21.	snake	80	14				

c. The trend of the lower SES black group, while below that of the middle SES whites, is generally higher than that of the lower SES white group. On no item did the lower white group perform significantly better than the lower black group. However, the lower black group surpassed the lower white group by a significant difference on two items:

#	item	Lower Black %	Lower White %
16.	ring	50	7
21.	snake	64	14

2. Lower male vs. lower female vs. middle female (insufficient middle SES male numbers): In general, the trend for the middle SES female group was higher than that of either lower SES group.

a. There were no significant differences in performance on any item between the lower males and the lower females.

b. While the middle SES female group performed better than the lower SES male group on all but six items, the differences were significant in only one case:

#	item	Lower Male %	Middle Female %
8.	children	50	100

c. Again, the trend for the middle SES girls was above that for the lower SES girls. The middle girls performed better than the lower girls on every item except for 3, however, there were significant differences on only 3 items:

#	item	Middle Female %	Lower Female %
16.	ring	70	25
34.	skiing	60	0
35.	hook	50	0

3. Black male vs. white male vs. black female vs. white female: The only significant differences which occurred were between black boys and white girls, and between white boys and white girls.

a. White females performed significantly better than black males on:

#	item	Black Male %	White Female %
12.	lamp	0	50
15.	pulling	14	64

b. The difference between the white boys and the white girls was significant for one item:

#	item	White Male %	White Female %
12.	lamp	0	50

Summary and Discussion for Age 2-3 to 2-11

1. Ethnicity: The fact that there were no significant differences between the black and the white groups in looking at the main effects is misleading.

Inspection of the ethnicity and SES interactions reveals that the lower SES black group performed generally above the lower SES white group.

It is felt that the differences between these two lower groups indicate a more serious degree of deprivation in the Center lower SES white population than in the lower SES black population.

2. Sex: The trends for males and females were generally similar, with the only significant difference occurring on the word "lamp."

3. SES: The middle SES group performed almost consistently better than the lower SES group. Most of the words that the middle SES children knew significantly better than the lower SES children are words which would be less likely emphasized in the daily life of a two-year-old: e.g., engagement ring, hardware nail, engineer, sail, skiing, and hook. However, the words on which performance was very similar for the two groups are more likely to be stressed in a child's initial experiences in a day care center: turtle, jacket, and hitting.

Age 3-0 to 3-8

Main Effects

1. Ethnicity: The trends for the black and white groups were generally similar, although the white group performed better on five-sixths of the items. These differences, while fairly consistent, were in no case significant.

2. Sex: Neither sex appeared to do better than the other. The only item for which there was a significant difference was:

#	item	Male %	Female %
27	peeking	78	48

3. SES: The differences between the middle and lower SES groups were large and consistent. The middle group performed as well as or better than the lower SES group on every item. These differences were significant for the following 21 items:

#	item	Middle %	Lower %	#	item	Middle %	Lower %
13.	sitting	95	65	38.	barber	68	9
22.	river	82	29	39.	parachute	50	21
25.	cone	91	53	41.	temperature	82	32
28.	kite	82	38	42.	captain	50	6
29.	rat	59	29	43.	whale	77	23
31.	sail	86	41	45.	balancing	41	12
32.	ambulance	68	38	46.	cobweb	41	12
33.	trunk	64	32	47.	pledging	32	3
34.	skiing	91	50	49.	hydrant	55	12
35.	hook	68	18	52.	hive	50	0
36.	tweezers	64	26				

Interactions

1. Lower SES black vs. lower SES white vs. middle SES white (insufficient middle SES black numbers): The middle SES white group scored consistently higher than either of the lower SES groups.

a. There were significant differences between the middle group and the lower SES black group on 10 items:

#	item	Lower Black %	Middle White %	#	item	Lower Black %	Middle White %
22.	river	19	75	41.	temperature	31	81
28.	kite	31	88	43.	whale	25	81
34.	skiing	44	100	46.	cobweb	6	50
35.	hook	19	75	49.	hydrant	6	63
38.	barber	6	69	52.	hive	0	50

b. The middle white group performed significantly better than the lower white group on the following 12 items:

#	item	Lower White %	Middle White %	#	item	Lower White %	Middle White %
25.	cone	33	94	36.	tweezers	22	69
28.	kite	44	88	38.	barber	11	69
30.	time	39	89	41.	temperature	33	81
34.	skiing	56	100	49.	hydrant	17	63
35.	hook	17	75	52.	hive	0	50
31.	sail	33	88	43.	whale	22	81

c. The trends for the two lower SES groups were similar, with a significant difference occurring on only one item:

#	item	Lower Black %	Lower White %
25	cone	75	33

2. Lower SES males vs. lower SES females vs. middle SES males vs. middle SES females: On all but eight of the items the two middle class groups scored higher than either lower class group. The items for which there were significant differences are presented next.. In each case the middle class percentage is the higher of the two.

a. Middle SES males vs. lower SES males:

#	item	Middle Males %	Lower Males %	#	item	Middle Males %	Lower Males %
22.	river	85	31	43.	whale	77	31
28.	kite	85	37	45.	balancing	54	6
35.	hook	54	12	46.	cobweb	54	6
38.	barber	69	19	49.	hydrant	69	12
42.	captain	54	0	52.	hive	69	0
				56.	weapon	38	6

b. Middle SES males vs. lower SES females:

#	item	Middle Males %	Lower Females %	#	item	Middle Males %	Lower Females %
22.	river	85	28	42.	captain	54	11
28.	kite	85	39	43.	whale	77	17
31.	sail	85	39	49.	hydrant	69	11
38.	barber	69	0	52.	hive	69	0
41.	temperature	77	28	56.	weapon	38	6

c. Middle SES females vs. lower SES males:

#	item	Middle Females %	Lower Males %	#	item	Middle Females %	Lower Males %
12.	lamp	100	56	32.	ambulance	89	44
22.	river	100	31	35.	hook	100	12
25.	cone	100	56	36.	tweezers	89	31
28.	kite	100	37	37.	wasp	67	19
29.	rat	78	19	42.	captain	89	0
31.	sail	100	44	44.	cash	78	12

d. Middle SES females vs. lower SES females:

#	item	Middle Females %	Lower Females %	#	item	Middle Females %	Lower Females %
22.	river	100	28	36.	tweezers	89	22
25.	cone	100	50	37.	wasp	67	17
28.	kite	100	39	39.	parachute	67	17
29.	rat	78	39	42.	captain	89	11
31.	sail	100	39	44.	cash	78	11
35.	ambulance	89	22				

e. The only two items for which there was a significant difference between the middle males and the middle females were:

#	item	Middle Males %	Middle Females %
41.	temperature	77	22
49.	hydrant	69	0

f. Although the trend for the lower SES males was generally below that for the lower SES females there were no significant differences between them on any item.

3. Black males vs. white males vs. black females vs. white females: The trends for these four groups were relatively close together, with no group performing consistently better or worse than another. The only groups for which a significant difference occurred on any item were the black males and the white males. On two items these groups manifested significant differences:

#	item	Black Males %	White Males %
34.	skiing	30	84
49.	hydrant	10	53

Summary and Discussion for Ages 3-0 to 3-8

1. Ethnicity: As in the 2-3 to 2-11 age group, there were no significant differences between the black and white groups in looking at main effects. Unlike the large differences which occurred between the lower SES black and the lower SES white groups in the previous age sample, such differences did not occur for the 3-0 to 3-8 group.

2. Sex: The main effects of sex revealed very little difference in the performance of the two groups. Likewise, the race and sex interaction and the SES and sex interaction failed to reveal any definite trends as a function of sex.

3. SES: The middle SES groups performed consistently higher than the lower SES groups. The differences were large enough and consistent enough to make individual examination of items almost fruitless. It seems that the middle SES groups knew all of the words better than the lower groups.

The gap between the middle and lower SES groups was even greater in this age group than it was between the middle and lower SES groups of the 2-3 to 2-11 sample. This gap did not continue to widen in the two older age groups, however. The least differences between middle and lower SES groups occurred in these two older age groups, 3-9 to 4-5 and 4-6 to 5-2. In both cases the middle SES trend was above that of the lower SES trend, but the differences between the two groups were not as pronounced as they were in the two younger age samples. As mentioned before, an investigation of these two older age groups is still in progress.

B) Family Style Education - Cognitive Data/Social Emotional Interpretation

The Family Style Program was established as an alternate to teacher centered and task centered day care programs. It was thought that a sound day care model would be one which allowed the children to have similar movements and interactions to those they had at home. It was also thought that it was easier to solve Hunt's "problem of the match" by providing for children many experiences from which they could choose, rather than to have a teacher choose for the child. Most importantly, it was thought that many day care programs today stress cognitive skills with little regard for social skills. We felt that emphasis should be placed on giving very young children experiences and choices that would help to develop a concern for their needs and rights in relation to the needs and rights of others. We wanted to accomplish this socialization in a way that did not curtail cognitive growth, but would actually enrich it. We hoped to provide a structure in which the child could feel good about himself and his actions, and most importantly, one in which he could enjoy himself.

Daily contacts with children of varying ages and freedom of movement between rooms were thought to be necessary for each child if the program was to be similar to the movements and interactions found in the home. It was thought that these daily contacts and freedoms would increase the number and kind of socializing experiences a child would have each day. By allowing him the choice of whom and what he would play with, we thought that situations would be created in which the children could learn to consider and respect the needs, rights, and responsibilities of others in relation to their own needs, rights, and responsibilities. These choices would also limit the number of power confrontations between teachers and children, thus making it easier for the child to feel good about and enjoy himself. The overall structure and rules for governance of the program are based on the idea that children are human and have rights as individuals.

A major goal of the program is to provide a richness of learning experiences from which children can choose in a setting which is constructed to reward self-initiated activities. The teachers work toward this goal by viewing themselves as one of the many experiences available to the children. One of her tasks is critically to observe the children and then accurately assess their needs. She uses this information so that she can organize and present an array of activities which match the child's developmental age. The teacher's most important task, however, is to be a model which the children imitate and identify with. Our teachers realize that the most crucial problems facing our world today are caused by the inability of people to interact peacefully with one another. We feel that it is essential that children should witness the teacher considering the needs and rights of other adults; not only the needs and rights of children. A more detailed description of the Family Style Program can be found in other center reports (Lally, 1970; Lally and Smith, 1970).

Preliminary Findings

Although the family style program has not been in operation long enough for us to get a full estimate of its strengths and weaknesses, some preliminary evaluation was conducted in July of 1970. Of the twenty-seven children in the program, varying numbers received entry testing and mid-point testing on different developmental

schedules. Seventeen children were assessed at both times on the Stanford-Binet, thirteen children on the Peabody Picture Vocabulary Test (PPVT), and fifteen children on the Pre-school Attainment Record (PAR).

No differences were found between the scores on the entry and mid-point tests on any of the measures. Table 22 contains the scores obtained at both test periods on the three measures used, and the amount of time children spent in the program between testing. Observation of the similarity of entry and mid-point test score means and the size of the standard deviations negated the need for tests of significance.

Discussion

It appears that the Family Style Program has not contributed to a decline in cognitive ability as measured by the developmental schedules reported above. This assumption is possibly a bit premature for the children tested have only participated in the program for part of a year. The data reported above, however, can be interpreted to support the switch in program style from a more restrictive age-grouped program to the freer Family Style Program for at least this small period of time.

The most important contribution of the Family Style Program is that children are helped to grow in areas that are not measured by the traditional tests of development. At this point, since we have little data on which to base our feelings, it is conjecture to say that children are gaining in ego strength, or are developing internal motivation toward learning, or are getting along better with each other. Teacher reports, however, indicate that something different is happening with the children since they moved to this program.

The children are reported to be reacting to the mixing of ages naturally and comfortably. The older children seem to be more observant and verbalize more about what it is like to be little. For example, two children were overheard talking about how different it is to be little and just learning to go up and down steps, from being big and knowing how to hop. There are questions about growth, "Was I little like Angie?" and interest in observing and helping in diapering and toilet training. The little children seem to have perfect models to imitate. When first moved into this setting, several of the children under two years of age increased their expressive language markedly and began to show immediate interest in toilet training. Behavior of the older children at lunch and snack times is mirrored in the behavior of the little ones. The older children have been helpful to and protective of the younger ones from the beginning of the program, and, because of praise from the teachers and the warm responses from the younger children for this help and protection, feel very good about themselves, and feel important. Older children have also started teaching the younger ones. It is common to see an older child labeling an object that he and a younger child are playing with and repeating, for example, "car, car, car" and trying to elicit vocal imitation.

Because of the wide age range, the children and the teachers do not expect similar responses to materials and activities. This seems to foster cooperation, coupled with a better understanding of developmental differences. The structure of the program also

Table 22

Mean Scores and Time in Program for

Family Style Children

Measure		Entry $\bar{X}$	Test SD	Mid-Point $\bar{X}$	Test SD	$\bar{X}$ Time Between Tests	$\bar{X}$ Age at Post test
Binet	N=17	112.6	13.0	115.5	10.7	5.6 months	40.2
PPVT	N=13	95.1	16.2	98.1	14.4	5.5 months	41.8
PAR	N=15	120.5	21.5	123.0	18.3	8 . months	38.4

allows for a freer selection of friends and work partners. It has been observed that some children seek out specific friends to play cards with, and others to work with in the Creative Expression room. It has also been observed that two of the children have become fast friends and move to all activities together.

The program has significantly affected teacher functioning. The teachers feel that the structure of the program has freed them to spend more time initiating activities, working with small groups or individuals, and planning special activities for particular children. They see that this structure has forced their role to change. One teacher stated, "I can still teach big and little, but not like I did before. Instead of making it a structured lesson, I must take advantage of the child's interests and activities." For example, if a child is building with blocks, this is a good time to help him learn about big and little. The teacher might have "structured" the experience by placing blocks of only two sizes on one of the work tables, but the children seem more receptive to this type of learning, and the teachers feel that it is more meaningful to them. The teachers are beginning to change their priorities and now seem to be more concerned about helping children make choices than with guiding them through particular activities. What the teachers used to judge as being too easy or too difficult might be just what the child wants and needs.

The wide variety of activities and materials used in this program have many levels of difficulty to meet the needs of all the children. This permits the child to play with pieces of equipment that one might not have programmed for a child of his age. He is free to go to a puzzle or game he may have mastered a year ago, and possibly get a good feeling on re-doing the task. He may also try a task that is beyond his capabilities, and his need for assistance will propel him to seek the help of an older child.

Finally, the most striking thing about the program is that the children always seem happy. There is less crying and more inter-child laughter and verbalization. It is not that they were unhappy before, but now it seems that the combination of freedom with many opportunities to enter into a variety of experiences with other children of various ages, a teacher, or by himself, has really set an enjoyable individually-paced atmosphere that the children love.

C) Children's Center Graduates Still in Day Care - Cognitive Data

In early October, 1970, a group of 20 children was transferred from the Syracuse University Children's Center (CC) to the newly organized Syracuse University Early Childhood Education Center (SUECEC). This group of Ss represents the 20 children from the CC three years and older, and is composed of children from low and middle income homes who had been at the CC for a mean of 37.35 months (SD=10.23). The SUECEC program, which is a full day care program, provides a continuation of intervention education for the children as well as a matched sample for the CC Ss for research purposes. Nineteen of the CC children were matched to a SUECEC child on the following criteria: age, education and occupation of mother and father; sex and race.[1]

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1 A match for one male was not found.

The logistics of matched control experimental design are well-known and acknowledged as being difficult to carry out; an exception may be instances where gross criteria (as above) are used, and even then, unless one has the luxury of an infinite N, it can be difficult to find successful matches for the sample under study. The 20 children who comprise the study group for this report seem to reflect unique characteristics which would indicate that matching on all but the grossest of demographic criteria would prove unsuccessful at any rate. This group is composed of children from both low and middle income homes as stated above; the children from the middle income homes themselves still represent family disorganization in some cases not unlike their lower income counterparts. Several of the group were enrolled in the CC because of their suspected failure to survive outside a program such as that offered by the CC; also, several of the children were selected from a longitudinal control group because staff observations on the children and their families, and the judgments of the director indicated their immediate need for day care. Not only the ameliorative aspect of intervention education as it applied to this sample was judged as being needed, but the wide array of services offered by the CC made their enrollment compelling.

The children who have gone to SUECEC are evaluated by the CC staff with the same tests that have been used to plot the developmental growth of children in the Center. The children are studied by the staff at SUECEC on variables different from those studied by the CC, but a cooperative research endeavor makes all data available to both staffs at all times. This report will focus on the results of early administration of two tests: the Stanford-Binet, and the Illinois Test of Psycholinguistic Ability (ITPA), 1968 revision.

Results of the ITPA Administration

Shortly before the study sample left the CC, the research staff decided to adopt the revised (1968) version of the ITPA. The reasons for this were elaboration of subtests, a larger standardization sample, simplified and more specific scoring criteria, and a more direct method for comparing individual Ss with the ITPA standardization sample. Eight selected subtests, of the total 12, were given from the ITPA, these tests being the most sensitive to change in language ability as shown in previous literature (Sigel, 1968; Karnes, 1968; Rentfrow, 1971; Lindstrom & Tannenbaum, 1970). A short description of each subtest follows, in order to give the reader more information when considering the data to be presented (cf. Kirk et al., 1968, pp. 9-13 for a complete description of the tests).

Auditory Reception. This test assesses the child's ability to derive meaning from verbally presented materials. The child is required to give a simple "yes" or "no" response to E's question, or to respond nonverbally with a nod or shake of the head. The items are arranged in order of difficulty, yet the response mode remains the same. Sample question: "Do boys play?"

Auditory Association. This subtest taps the child's ability to decode, encode, and process verbally presented analogies. The organization of linguistic materials and manipulation of them determines success on this test.

Verbal Expression. In this subtest, the child is required to draw on his storage of concepts to encode information about four, three-dimensional objects. The child is shown each object one at a time and required to express his own concepts verbally. Scoring is in ten categories covering the number of discrete, relevant, and approximately factual concepts expressed.

Grammatic Closure. This subtest assesses the child's knowledge and usage of grammatic rules; it involves his ability to anticipate or to predict the correct grammatic form. The form rather than the content of the word is of importance; the test is orally presented and demanding, and the sentences used are common redundancies of American speech.

Manual Expression. Unlike Verbal Expression, this test is totally motor in the expressive response demanded of the child. The child is shown pictures of common objects and asked to show what is done with these (rather than tell what is done with these). The test requires that the child express his concepts manually.

Visual Closure. This test requires the child to identify a common object (which he has labeled) from an incomplete visual presentation. The child is given 30 seconds to pick out all the objects that are embedded in a larger picture; the objects are depicted in varying degrees of concealment. The visual closure nature of this test assumes that gestalt operations can be performed by children of young ages.

Visual Sequential Memory. This test requires the ability to reproduce a sequence of symbols which are depicted in nonmeaningful line drawings on plastic chips. The examiner produces a pattern in line drawing mode, S looks at it for five seconds, and S is then handed the appropriate chips and asked to reproduce it. The test is heavily weighted as to memory capacity, and the ability to understand one-to-one relationships between pictures and figures.

Visual Reception. This test requires the child to derive meaning from visually presented material, and to identify a similar object from an array of four others. The child is shown a picture of an object, and is then asked to find one like it from a stimulus array of others. The four alternatives are structurally similar to the standard, but only one is correct.

The ITPA has proven to be a valuable and rich test for research, diagnostic, and remediation purposes. It is included in the test battery and curriculum planning because retarded language development seems to preclude adjustment to society and to functioning in the school system. Bereiter & Engelmann (1966) have pointed out the areas of language development where children from low income homes seem to have difficulty, as have Sigel & Perry (1968). From a research viewpoint, the ITPA provides a wealth of information which can be used for group comparisons, for plotting individual growth and language development, and for planning curricula and individual tutoring programs. The scoring system for the new ITPA provides scores for individual Ss on two major variables: Psycholinguistic Age (PLA) which is the S's Raw Score transformed into an age score (similar to a Mental Age score) and which can be used as a frame of reference when evaluating the child's language ability relative to his chronological age; the Scales Score (SS) which is a transformation of the Raw Scores such

that at each age and for each of the 12 subtests the mean performance of the referral group is equal to a score of 36 with a standard deviation of 6. Scaled scores..... take into account both group means and variances. Thus, the SSs provide a more versatile means of comparing the child's performance from subtest to subtest than do the PLAs (Kirk et al., 1968, p. 94).

The ITPA analyses which follow present scores for the two groups for eight subtests as well as total score; comparisons were made between PLAs and SSs, PLAs being converted into months. To aid in interpretation of SS values, the reader should keep in mind that the mean SS is 36 (SD=6), and this is based on the ITPA standardization sample. The total score presented is the sum of the eight subtest scores; there is no way this can be reported by PLA or SS as not all ITPA subtests were given, and any transformation would give an artificial view of the samples, as well as severely depress the PLA and SS values.

Table 23 reports the means, standard deviations, and t values for the between group comparisons. On two subtests, Auditory Association and Verbal Expression, the CC sample scored significantly higher than the SUECEC group, differences being significantly different for both PLA and SS values ($p < .05$, two-tailed). The CC sample scored approximately three months above their mean chronological age, whereas the SUECEC sample scored approximately four months below their mean age. The same pattern is present for the Verbal Expression subtests, where the CC sample scored approximately six months above their mean age, and the SUECEC sample scored approximately four months below their mean age.

For the remaining six subtests, this pattern is not stable. None of the group differences were significant, and the CC sample scored higher than the SUECEC sample on three subtests--Auditory Reception, Manual Expression, and Grammatic Closure. The SUECEC sample scored higher than the CC sample on Visual Memory and Visual Closure, and the groups scored approximately equal on Visual Reception.

An attempt to further characterize the two samples is presented in Tables 24 and 25. Each table represents the percentages of Ss who were scoring above, at, or below their respective chronological ages for the eight subtests. From these tables it can be seen that in every case, the CC sample surpassed the SUECEC sample in the percent of Ss scoring at or above their ages. On all but two subtests more than 50% of the CC's sample are at or above their CA; however, on only two subtests do 50% of the SUECEC sample score at or above their CA. On those two subtests where 50% of the CC sample is scoring below their CA, a large majority of the SUECEC sample is scoring similarly below their CA. These results are perhaps more meaningful than those reported in Table 23, as they are based on interpretive data which better describes each sample's linguistic ability relative to age. For both groups, where Ss scored below their CA, the majority of cases are in the intervals which are one to 12 months below CA. There was a statistically significant difference between the mean PLA and SS for the CC and SUECEC groups for the Auditory Association and Verbal Expression subtests. Tables 24 and 25 show that for the Auditory Association subtest, 67% of the CC group scored at or above their CA, while 21% of the SUECEC group did; for the Verbal Expression subtest, 62% of the CC group scored at or above their CA, while only 21% of the SUECEC group did. The encoding process required in both of these tests as well as the ability to relate concepts verbally suggests that the CC group is more advanced in their ability to do this as compared with the SUECEC group.

Table 23

ITPA-Eight Selected Sub-tests

Means, Standard Deviations, t Values

Item		CC (N=18) Mean	CC (N=18) Standard Deviation	SUECEC (N=14) Mean	SUECEC (N=14) Standard Deviation	t
Chronological Age (in months)		49.3	6.5	48.9	6.8	.17
Auditory Reception	PLA[1]	51.0	13.8	44.1	11.8	1.49
	SS	37.5	7.8	33.6	7.7	1.34
Auditory Association	PLA	52.9	10.9	44.5	7.8	2.45*
	SS	40.2	7.4	33.9	7.1	2.42*
Verbal Expression	PLA	55.5	12.6	44.4	8.2	2.85*
	SS	41.8	8.7	34.1	5.8	2.81*
Visual Reception	PLA	54.8	11.1	54.3	10.9	.13
	SS	39.3	5.7	39.1	4.5	.07
Manual Expression	PLA	67.4	15.2	60.5	19.6	1.12
	SS	43.0	5.1	40.9	7.7	.91
Gramatic Closure	PLA	50.7	13.2	45.2	7.3	1.40
	SS	38.9	10.2	34.4	6.3	1.47
Visual Memory	PLA	40.5	12.8	41.5	8.3	- .25
	SS	32.7	5.2	33.0	4.6	- .12
Visual Closure	PLA	45.1	11.5	51.6	12.1	-1.57
	SS	34.1	6.8	39.0	8.6	-1.81
Total (Sum of 8 Subtests) (Raw Scores)		93.0	29.5	77.6	25.9	1.54

[1] Psycholinguistic ages are given in months.

* Significant at the .05 level (two tailed test).

Table 24

Distribution of ITPA Sub-test Scores Relative To

Chronological Age in Children's Center Sample

Sub-tests	% Above CA	% At CA	% 1-6 mos below CA	% 7-12 mos below CA	% 13-18 mos below CA	% 19-24 mos below CA	% 25-30 mos below CA	% 31-36 mos below CA	Below Norm
Auditory Reception	56		28	6	6		6		
Auditory Association	67		16	6	11				
Verbal Expression	57	6	28	6	6				
Visual Reception	72			28					
Manual Expression	88		6	6					
Gramatic Closure	56	6	11	6	16	6			
Visual Memory	11	6	38	16	11	11			6
Visual Closure	33	11	22		22	6	6		

Table 25

Distribution of ITPA Sub-test Scores Relative to Chronological Age

in Syracuse University Early Childhood Education Center Sample

Sub-tests	% Above CA	% At CA	% 1-6 mos below CA	% 7-12 mos below CA	% 13-18 mos below CA	% 19-24 mos below CA	% 25-30 mos below CA	% 31-36 mos below CA	Below Norm
Auditory Reception	29		14	21	29	7			
Auditory Association	7	14	36	29	14				
Verbal Expression	14	7	29	50					
Visual Reception	50	7	14	21			7		
Manual Expression	71		14	7		7			
Gramatic Closure	14		43	36	7				
Visual Memory	7		29	42	14	7			
Visual Closure	29	7	29	14	21				

The Verbal Expression subtest was analyzed further for each group in an effort to understand the nature of the differences and to describe each group's performance vis-a-vis scoring categories. This subtest is probably the most difficult for the child, as it requires him to emit responses which are conceptually oriented as well as to forego redundancy and perseveration in order to obtain a high score. The instructions require the examiner to try to elicit many descriptive statements from the child. The child's responses are scored in one of ten categories: Label and Class; Color; Shape; Composition; Function or Action; Major Parts; Numerosity; Other Physical Characteristics; Comparison; Person, Place or Thing. A training session is included in the subtest with a demonstration item. During the training, E can elicit as many responses as possible, and if the child does not score in at least five of the above categories, E can question him explicitly in order to elicit one--e.g., E can ask what color the object is. This is to get the child to respond on as many dimensions as he can and to point out to him that more than one response is permissible and desirable.

Further analyses of the Verbal Expression subtest are reported in Tables 26 and 27. Table 26 shows the percentages of first responses which fall into one of the ten categories. This analysis was done in order to examine the first concept or dimension the Ss used in their approach to the task; when presented with an object, how the Ss went about fulfilling E's demand to "tell me all about this." This analysis refers to the Ss' approach to problem solving on a verbal level as well as to their usage of cognitive modes in problem solving. Table 26 indicates that both groups' first identification of the objects was by label: the CC group also used the categories of Function, Shape and Composition; for first response the SUECEC group used the Function, Color and Person, Place or Thing categories to first identify the objects. These results suggest that the majority of the Ss identify the object by name or class as their first response. Table 27 shows the percentage of times each category was used by each group. In light of Table 26, the SUECEC group labeled the objects first, which also was the modal response category; Function/Action and Color are the other two most frequently used categories by these Ss. The CC group identified the objects by label (as seen in Table 26); however, their modal response category was Function/Action, which appears to be the category where the CC group differed most obviously with points gained. The CC children were able to give more functions for each object than the SUECEC group. This suggests that their approach to the task involved the use of more than one dimension for their major descriptions; they also used all ten scoring categories. The results do not point up compelling differences between the groups; rather the analysis was done as an internal assessment of the Verbal Expression subtest in order to describe one group's approach to the task. The results suggest that the groups can emit appropriate conceptual definitions and that they tend to utilize more than one class of concepts. Categories of concepts which were not used, or were used with small frequencies, are those which appear to be more difficult response categories, and categories which one would probably not expect Ss of this young age to use. Both groups do appear to be using a divergent thought process in their approach to the task as evidenced by their tendency to label the object first, then elaborate on their response. This may be in part due to the test administration, as E must try to elicit more responses from the S, but even with this stipulation, Ss could conceivably stick to their original label--however, this does not appear to be the case. An interesting variation on this would be to utilize a different dimensional modality such as a photograph of the object, and study variation in response between this and the object in its concrete, three dimensions.

Table 26

Comparison of Percentages of First Response Given to ITPA Verbal Expression Subtest

Category	CC	Category	SUECEC
Label and Class	79%	Label and Class	66%
Function/Action	8	Function/Action	11
Shape	6	Color	9
Composition	3	No Response	13
No Response	4	Person, Place,Thing	2

Table 27

Comparison of Percentages of Categories Used of ITPA Verbal Expression Subtest Between CC and SUECEC Groups

Category	CC (N=18)	SUECEC (N=14)
Label and Class	27%	36%
Color	13	20
Shape	8	8
Composition	2	1
Function/Action	36	25
Major Parts	2	1
Numerosity	1	0
Other Physical Characteristics	2	0
Comparison	1	0
Person, Place, Thing	9	7

In summary, results of the ITPA do not suggest wide discrepancies between the linguistic functioning of the two groups as far as mean differences between groups are concerned. Internal analyses of the patterns of the two groups do suggest that the CC group was measured as performing in line with their respective ages, while the SUECEC group was performing somewhat below their respective ages. The strong emphasis the CC places on language and usage of symbols, linguistic codes, elaboration of responses, and grammatic rules may indicate that the training the CC group received has helped to bring them to the levels where they are now functioning. In a similar vein, the SUECEC group has not been in preschool prior to this experience, and their language development is based more on home experiences than on experiences in the classroom. The least that can be said is that the CC curriculum is not highly discrepant from linguistic patterns used in the homes of these children, and in some instances may even be richer in content than that of the home language of these children. More meaningful analyses could have been performed between the groups if test data were available for both groups at earlier ages with this test to assess the development of language within the groups. Post-testing of both groups will indicate what advances have been made in the two groups after approximately one year in the new program, as well as what differences still remain.

The above results indicate something about the new ITPA using this sample. It appears that the Visual Memory and Visual Closure may be somewhat inappropriate for children of this age and from the type of sample from what they were drawn. This is meant as an ad test criticism and not an ad Center or SUECEC criticism. It seems that there are language needs of young children which must be dealt with before training in areas such as visual memory and identification of embedded figures can occur. No doubt both groups could be trained to excel in these areas, but this might be at the expense of training the child in language abilities which are more necessary for adequate functioning and communication.

Results of Stanford-Binet Administration

Shortly after entrance to the SUECEC program, both groups of children were administered the Stanford-Binet, Form L-M. For the CC group, this was one of many administrations of the test, most of the Ss having been tested at the Center during the time they spent there. Eighteen children in each group were tested on the Stanford-Binet; Table 28 reports the results of the administration. In Table 28, it is shown that the CC group had a mean IQ of 109.2 (SD=14.4) and the SUECEC group obtained an IQ of 102.0 (SD=21.6), the difference of seven points not being statistically significant. Both groups were the same age. The range of IQ's for the CC group was 88-134, and that of the SUECEC group was 81-156. Examination of the median scores for the two groups indicates that the CC median was 108 while the SUECEC median was 94. The most compelling examination of this data can be seen in Table 29 where a full listing of the IQ's for the two groups is presented. Although presentation of individual IQ scores on a research report may be somewhat unorthodox, this data is presented here to show the wide variation in the SUECEC group, and its comparison vis-a-vis the CC group distribution. Table 29 does show that the CC distribution is not severely skewed in either direction, whereas the SUECEC distribution is skewed to the lower end of the IQ distribution. There is a 40 point difference between the third highest value and the top value for the SUECEC group, while that same difference for the CC group is 9 points. The standard deviation for the SUECEC group is 21.6 whereas that of the

Table 28

Means, Standard Deviations and t Values for

Stanford-Binet Administration

	Children's Center			SUECEC			
	Mean	SD	N	Mean	SD	N	t*
Age (in months)	48.4	6.3	18	48.4	7.0	18	.00
Mental Age	52.4	8.1	18	49.6	8.2	18	1.04
IQ	109.2	14.4	18	102.0	21.6	18	1.18
Picture Vocabulary	12.9	1.8	18	12.5	1.7	18	
Vocabulary	3.3	2.3	16	2.7	2.3	14	

* No t values statistically significant.

Table 29

Distribution of Stanford-Binet IQ's

Children's Center	SUECEC
134	156
128	153
125	113
125	111
120	109
120	109
118	105
115	97
111	94
105	94
105	93
98	92
97	91
97	87
94	85
92	84
92	82
88	81
Median =108	Median =94

Group Median = 101.5

CC group is 14.4, which approximates that of the Stanford-Binet IQ standardization group. The CC group appears to be more homogeneous as to distribution of the IQ's whereas the SUECEC group appears to be more variable, and in fact this is so. If the top two scores in each distribution are dropped, the new means and standard deviations are now 106.4 (SD=12.8) for the CC sample, and mean of 95.4 (SD=10.8) for the SUECEC sample. Clearly, this indicates that the top two scores for the SUECEC sample elevate the mean and standard deviation and may mask differences between the groups. In light of what was reported at the beginning of this section, namely the difficulty with matched group designs, these results do indicate differences may exist between the groups and shows that the adequacy of one single match can serve to change an entire distribution. Although it is not the intention of this section to explore methodological issues, it is felt that this analysis may shed some light on the seemingly unexpected results which were found between the groups.

Although the total group comparisons proved no significant differences existed between the groups, an internal analysis of the tests was performed to determine if any patterns existed which would suggest that one group was performing at a more successful rate on certain types of items, and to see what differences existed as to the Ss' capacity to deal with items above their ages.

An item analysis by percent passing each item for years III-6 through year VI was done, as most Ss in each group were administered these years. These results are shown in Table 30. The items where the CC group surpassed the SUECEC group are those which deal with perceptual-motor abilities, reasoning, comprehension, perceptual discriminations and definitions; the two items the SUECEC group performed better on were Objects from Memory and Aesthetic Comparison. At year V, which is 12 months above the mean age for each group, the CC group surpassed the SUECEC group in every item but Patience Rectangles (where each group performed at approximately the same percentage). The latter item has been shown to be too difficult for this age level and may appear to be misplaced (Meyer and Goldstein, 1969; Lindstrom and Tannenbaum, 1970). At year level VI, where most Ss reached ceiling, the CC group performed better on only one item, namely Mutilated Pictures. This item seems to be a perceptual discrimination item which corroborates instances at earlier age levels where the CC group did better than the SUECEC group. The results for the Binet year levels above that of the age for each group indicate that the CC group was able to deal with items which were above their mean group age, and that they were able to perform at least ten percent better than the SUECEC group on these items.

A breakdown of the data by sex was done in order to see if these results were similar to those found by Scott and Lally (1969) where a training by sex interaction occurred, with trained female infants scoring higher on the Griffiths test. Results of this analysis are found in Table 31. In Table 8 it can be seen that the CC females are scoring at a mean IQ of 113.0 (SD=20.83) while the males are scoring at 104.4 (SD=14.55). This indicates that these results corroborate Lally's findings in this sample of children who have been in intervention for a mean of 37 months. For the SUECEC sample, the females' mean IQ was 99.7 (SD=20.77) and the males' mean IQ was 104.7 (SD=23.78). No inferences can be made about the SUECEC group as they had been in preschool for only a few weeks when this data was collected. However, the results do indicate that the CC training had a differential effect betwen training and sex, with the females scoring higher.

Table 30

Percent Passing Items in Years III-6 through VI

on Stanford-Binet

	CC (N=18)		SUECEC (N=18)
		Year III-6	
1	89%		94%
2	100		82
3	100		82
4	83		88
5	100		94
6	89		65
		Year IV	
1	39		24
2	72		82
3	66		47
4	72		71
5	94		82
6	61		53
		Year IV-6	
1	71		81
2	47		31
3	61		[illegible]
4	24		25
5	71		69
6	72		50
		Year V	
1	38		27
2	44		27
3	88		67
4	19		0
5	63		47
6	25		27
		Year VI	
1	19		14
2	6		14
3	25		7
4	6		0
5	19		14
6	6		14
Mean Age in Months	48.4		48.4

It was of interest to the CC staff to examine the results of prior Binet administrations in relation to the results obtained when the children had moved to the SUECEC. The results of two Binet administrations were examined and the scores are presented in Table 32. The scores in Table 32 represent the first Binet administration that the CC sample had been given, and the last Binet they had before leaving the CC and going to the SUECEC. The first Binet administration showed the group to have a mean IQ of 116.68 (SD=5.24) at a mean age of 25.6 months (SD=3.45). Their last Binet prior to leaving the CC yielded a mean score of 115.18 (SD=15.54), at a mean age of 40.1 months (SD=5.97). The variability in IQ between age 25 months and 40 months is obscured by the mean IQ, however the test demands are also different between the two test administrations. This point will be dealt with later. It is of interest here that the CC group dropped in mean IQ from their last test at the CC, and their age increased an average of 8 months. It is of theoretical importance that one would predict an increase in IQ for the CC group because of their familiarity with the test materials and nursery school; however, this did not happen. This drop in IQ score may be attributed to many things, not the least of which are trauma associated with leaving the CC, and also the demands of the Stanford-Binet at older age levels. The latter is plausible when examining the types of items administered at the lower age levels relative to those being administered at the age levels where the Ss were scoring in this report. The younger age levels are mainly motor in demand and require few verbalizations; at the age levels explored herein, the opposite seems to be the case, especially after age level V. The Ss are now required to verbalize a great deal and are penalized if they do not or cannot. At the earlier ages, simple motor and imitative responses are required. Both groups are faced with the same problems, and this interpretation should not be overlooked. The other explanation for these findings, namely trauma associated with leaving the CC is of importance to the CC staff as it plans future operations. If, as has been suggested by many, these children come from unstable homes where the instability may prove crippling (see earlier sections of this report for elaboration of conditions surrounding the CC population), then it seems plausible that their separation from the CC may have been too great a threat to their stability, and at the time of testing they may not have fully recovered from effects of leaving. The stability of their relationships with CC staff and teachers may have been threatened and caused a decline in cognitive as well as social-emotional functioning. If this is the case, this trauma and instability holds for children from lower as well as middle income homes. If the children recover and have to build new relationships with staff and new children at the SUECEC, then an increase in IQ functioning at the end of their stay there would be expected. It should be of interest to examine scores of these children when they leave the SUECEC program to see if this initial decline in IQ is temporary, or whether this assessment of their IQ is an adequate indicator of their cognitive functioning. This problem of developmental regression will be treated in detail in a later section which deals with graduates of the CC at the end of kindergarten and first grade. It will also be of interest to examine the IQ scores of both groups at the end of the year to see the effects of the SUECEC program and curriculum on their cognitive functioning.

D) Children's Center Graduates - Follow Up Study

This section of the report will focus on 24 children who have attended the CC and who are now attending public schools. The group is composed of 11 children from

Table 31

Binet IQ by Sex for Two Groups

	CC			SUECEC		
	Mean	Standard Deviation	N	Mean	Standard Deviation	N
Female	113.0	20.83	9	99.7	20.77	10
Male	104.44	14.55	9	104.87	23.78	8
		Ages for Above Four Groups				
Female	49.88	7.64		50.1	7.75	
Male	46.88	9.40		46.75	7.74	

Table 32

Ages and Scores for Children's Center Sample Obtained from Two Prior Binet Administrations

	Age		IQ	
	Mean	Standard Deviation	Mean	Standard Deviation
Binet 1	25.6	3.45	116.68	5.24
Binet 11	40.1	5.97	115.18	15.54

Note: Binet 11 is the last test score prior to leaving the Children's Center.

low income homes and 13 from middle income homes. Some of the Ss were enrolled in the CC program at its inception, and the rest were admitted over a period of years. The results to be presented represent four Stanford-Binet administrations for this sample: the last two tests prior to leaving the CC; the test administered in Spring of kindergarten; and the test administered in the Spring of first grade. Several of the Ss are now in third grade, but the N for grades higher than first is so small that analyses would be fruitless. Table 33 presents the means and standard deviations of the two groups for four Stanford-Binet administrations. Both groups showed gains between administrations I and II, which are the last two tests prior to leaving the center. The mean increase for the low income sample is 7 points and that for the middle income is 8 points. At the end of kindergarten (Binet III) the low income group has regressed to the level at which they were approximately one year prior to leaving the center, but the middle income group has regressed only 3 points. Thus, there is a slight regression in both groups between the time they left the center and their performance at the end of kindergarten. At the end of first grade, a dissimilar picture emerges. The low income group has dropped approximately one point in average IQ, whereas the middle income group has increased, and in fact increased beyond their mean IQ at the end of kindergarten. These results, especially for the low income group, are similar to patterns found by Gray and Klaus (1970). Their sample was composed of low income Negro children, and comparison with the CC low income sample is possible (although the CC sample did include a mixture of ethnic groups). In the CC low income group, intervention effects as measured by the same and consistent test, showed an increase in functioning, and then a slight decline in test pattern; future testing will tell whether this pattern remains stable or whether the group increases sharply or decreases sharply. The middle income group showed a similar pattern, i.e., increase, then decrease; however, at the end of first grade (approximately two years later after leaving the center) the group has risen sharply to a point above their last test at the center. It seems plausible that the CC program has had an effect on these children, both from the low and middle income homes. The cognitive functioning of the CC children from low income homes at the end of kindergarten and first grade does not place them outside the realm of average functioning, nor has the CC produced any "supermen" from the lower income population. Conjecture only could lead to a discussion of what the level of functioning would have been had this group not participated in the CC program. At this point it would be suspect to say that progressive retardation has been offset in those children who come from life situations with an almost built-in poor prognosis for adequate cognitive functioning; however, what can be said is that even two years after having been in an intervention program, this group has not regressed to a point where their prognosis would suggest further retarded development.

A point which needs to be considered in discussing developmental regression is that of the school situation in which the children are found after they leave the center. It is without doubt that the children from the middleincome group go to schools which are the most desirable from the teaching viewpoint or the social viewpoint. These schools tend to attract the most progressive teachers, and teachers who can work with children on levels where the children seem to be functioning. The typical high caliber of the students in these schools may make teaching more exacting for the teachers as far as teaching input is concerned. For the child from the low income home the school situation is quite different. The children from the low income homes

Table 33

Results of Four Stanford-Binet Administrations for Two Groups of Children's Center Graduates

		Low Income (N=11)		Middle Income (N=13)	
		Mean	SD	Mean	SD
Binet 1	Age	46.00	3.67	53.07	4.64
	IQ	99.90	11.14	114.38	18.86
Binet 11	Age	60.18	3.42	58.70	3.92
	IQ	106.60	10.11	122.84	20.33
Binet 111	Age	72.81	3.80	70.53	3.10
	IQ	99.45	16.10	119.61	24.12
Binet IV	Age	85.09	3.90	82.30	2.98
	IQ	98.09	11.67	125.23	28.30

Note: Ages are given in months.

Binet 1 and 11 are results prior to leaving Children's Center.

Binet 11 is Spring of Kindergarten.

Binet IV is Spring of First Grade.

seem to attend neighborhood schools near or around where they live, where teaching may be far more difficult than in those schools where the middle income children attend. Conditions in the schools in the low income areas suggest that discipline may be a problem most of the time, and the teacher's attention is more often than not directed toward managing the group rather than toward directing individual children in learning activities. In some cases, the children from the low income sample were bussed to schools in middle income neighborhoods, but no data is available to allow direct comparisons between those who were bussed and those who were not. The social, political, and educative ramifications of school bussing are not to be discussed herein, but it does seem plausible that qualitative (school) as well as personality factors (child) may account for some of the regression which occurs in the sample of children from low income homes.

In order to investigate performance differences between the low income sample and the middle income sample, an item analysis of the Stanford-Binet for four administrations was done using percent passing each item at each year level. The results of this analysis presented in Table 34 showed Ss in each group were able to deal successfully with items at, and, one year beyond, their age levels while they were still enrolled in the Children's Center. However, a different picture emerges when the children have been out of the center for one and two years. On Binet administration III (after kindergarten) it appears that the low income sample has "lost" some of their ability to deal with the VI year items and above, whereas the middle income sample is more successful at the VI year level, and far more successful at levels above this. The Binet administration after first grade (when Ss had been out of the center for approximately two years) shows this point even more strongly, with the middle income sample having items administered up to the Superior Adult I level, while the low income sample having year level XI as its highest level administered. Although only a few of the low income sample passed anything above year IX, more than fifty percent of the middle income sample passed items at years IX, X, and XI. These results can be further explored by looking at ceiling and basal levels. Both groups obtained basal scores within one half year of each other; however, when examining the ceiling age levels of the two groups, the middle income group equals and surpasses the low income group, and where the two groups are equal in highest level reached, more of the middle income group was administered the item than was the low income group. Inspection of the Stanford-Binet at the levels above VI shows the majority of the items to be verbal in nature, involving reasoning, comprehension, memory, foresight, and logical operations. Apparently, the middle income group is superior to the low income group in capacity for, and ability to use these skills. Strodtbeck's notion of the "hidden curriculum of the middle class home" may account in part for some of these differences (Strodtbeck, 1967). The middle income child may be taught, however unobtrusively, and may have been taught, functions at earlier ages which have equipped him to deal with logical operations much earlier than the child from the low income home. Further, the middle income child may have much more carry-over from school to home, and much more feedback given to him by both parents and teachers which, with appropriate input and retention, enables him to deal more successfully with items on the Binet. The child from the low income home, however, may not have these factors impinging on him, and his success at the older year levels on the Binet depends on his ability to abstract and encode information which may not be part of his cognitive apparatus and storage.

Table 34

Percent Passing Items in Years III - 6 through VI on Stanford-Binet: Fall of Last Year in Center

	Lower (N=11)	Middle (N=13)
	Year III-6	
1	75%	88%
2	100	88
3	100	100
4	100	100
5	100	100
6	100	71
	Year IV	
1	75	72
2	87	91
3	75	81
4	87	91
5	87	91
6	87	72
	Year IV-6	
1	87	83
2	37	50
3	75	75
4	37	58
5	66	71
6	100	91
A	40	80
	Year V	
1	44	54
2	33	63
3	88	100
4	44	50
5	53	72
6	33	18
	Year VI	
1	25	41
2	13	25
3	13	66
4	0	18
5	25	34
6	13	27
Mean Age In Months	46	53

Percent Passing Items in Years IV through VII on Stanford-Binet: Spring of Last Year in Center

	Lower (N-11)	Middle (N=13)
	Year IV	
1	100%	34%
2	100	100
3	80	100
4	80	100
5	100	100
6	100	34
	Year IV-6	
1	100	91
2	67	91
3	100	100
4	100	91
5	83	88
6	100	100
A	80	80
	Year V	
1	50	72
2	70	92
3	100	100
4	50	77
5	90	92
6	30	30
	Year VI	
1	40	61
2	50	69
3	30	77
4	30	41
5	60	61
6	60	54
	Year VII	
1	10	0
2	0	38
3	0	[illegible]
4	20	54
5	30	46
6	0	0
Mean Age In Months	60	58

Table 34 (cont'd)

Percent Passing Items in Years V through IX on Stanford-Binet: Spring of Kindergarten

	Lower (N=11)	Middle (N=13)
	Year V	
1	100%	57%
2	67	86
3	88	100
4	88	100
5	88	100
6	55	57
	Year VI	
1	73	75
2	45	67
3	64	100
4	36	75
5	64	67
6	82	75
	Year VII	
1	27	54
2	9	13
3	9	13
4	45	13
5	27	13
6	18	34
	Year VIII	
1	67	58
2	50	50
3	0	42
4	16	34
5	59	25
6	0	34
	Year IX	
1	0	9
2	0	0
3	40	18
4	40	45
5	0	0
6	0	18
Mean Age In Months	72	70

Percent Passing Items in Years VI through X on Stanford-Binet: Spring of First Grade

	Lower (N=11)	Middle (N=13)
	Year VI	
1	100%	100%
2	82	78
3	100	100
4	91	100
5	91	78
6	100	100
	Year VII	
1	63	100
2	36	77
3	54	92
4	75	77
5	54	69
6	18	69
	Year VIII	
1	82	69
2	63	77
3	0	54
4	18	54
5	45	54
6	36	77
	Year IX	
1	11	50
2	22	50
3	34	16
4	34	67
5	0	50
6	11	34
	Year X	
1	25	44
2	0	22
3	23	44
4	0	44
5	25	44
6	0	22
Mean Age In Months	85	82

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